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SOME PRINCIPLES IN THE SURGERY OF THE PHARYNX.*

BY WILFRED TROTTER, M.S. LOND., LL.D. EDIN., F.R.S.,
SURGEON TO UNIVERSITY COLLEGE HOSPITAL.

WHEN a practical art is growing with health and vigour it gathers a rapidly accumulating store of technical detail which tends to become the chief task of the student to learn and of the practitioner to keep up with. This manifestation of growth is in itself natural and in no way to be deplored. It should however remind us of the need for a periodical return to the consideration of the principles on which the whole structure of the art is founded. Only in this way is it possible to retain our confidence that the growth of detail has not become in any way unduly exuberant or followed the tendency inherent in all successful techniques and become an end in itself.

These elementary reflections are by common consent particularly appropriate to the art of surgery. No art has shown itself more capable of vigorous and effective growth, none has developed a greater and more rapid accumulation of detail, and of no technique can it be said with greater truth that the practice of it should never become an end in itself. Such considerations apply to the surgery of the pharynx not less than to any other branch, so that the problems I propose to deal with have a general as well as a special interest and form a valuable link connecting a rather intricate and specialised department with the general body of knowledge.

The life of modern surgery has now lasted for about half a century. It began with the Listerian technique for the prevention of external wound infections from which it derived a truly remarkable impulse of growth. That impulse was no doubt by far the most fruitful that surgery had ever received, and was indispensable to the further progress of an art which was indeed at that time actually threatened by decay and despair. Powerful however as was the Listerian inspiration, it was in essence a clue to knowledge rather than a revelation of all surgical truth. Progress necessarily still remained a matter of evolution and of ground gained step by step, but it became far more rapid and more rational than it had ever been before. This new quality has given to the surgical history of the last 50 years a logic and a sequence that makes an interesting spectacle of the road the art has travelled during that time to reach its present considerable efficiency.

Conditions of Advance in Surgery.

When we survey the incidents of that road we find that the effectual entry of surgery into a fresh region of the body, while it of course has primarily depended on the power to exclude external infections, has also been dependent on the satisfaction of certain other requirements. These requirements comprise knowledge bearing on the part in question from different aspects which may be grouped in three classes.

(*a*) *Anatomical and physiological knowledge* of the part in question is necessary to allow the surgeon access with the least disturbance and to enable him to carry out his task with as little effect on function as may be. Since it gives to the inventiveness of the surgeon its sole trustworthy starting point, effectiveness in this respect is the most obvious and elementary requirement of any new departure. As a fact of history however, the part it has played has not always been equally great and equally early. The surgery of the central nervous system was from the very first intimately connected with anatomical and physiological principle, whereas abdominal surgery was far advanced before it was seen to be worth while to give close attention, for example, to the anatomy and physiology of the abdominal wall and the viscera.

(*b*) The *control of infective material* normally present in a region has taken a large part in certain great surgical advances. It was conspicuous in the second expansive period of abdominal surgery when the ability to excise and suture the intestine was acquired. Such success as has been obtained with regard to this requirement has been almost entirely a surgical achievement and has owed remarkably little to the help of the pathologist or bacteriologist.

(*c*) The *local pathology* of a region provides the final requirement that must be met before surgery is capable of free expansion there. The surgery of a given region may be in possession of satisfactory means of access to it and yet be incapable of development unless the surgeon has some fundamental understanding of the diseases he proposes to attack there. The evolution of the great branches of surgery has so frequently illustrated this principle as scarcely to call for the mention of specific cases.

When the Listerian technique freed surgery from the danger of external infection an immediate harvest of successful treatment was ready to be gathered. This harvest lay entirely in those fields where already some progress had been made in meeting the requirements we have specified as essential for satisfactory surgical progress. Accidental wounds and compound fractures at once became subject to precise and reasonably safe treatment, open operations for the removal of many growths, for the correction of deformities, for the cure of diseases of bones and joints became feasible and satisfactory. Almost none of this immediate harvest came however from the great regions of the abdomen, the chest, the central nervous system. Here the essential requirements for progress were not yet met, and advance must depend once more on a relatively slow process after detailed preparation of the ground, though now of course, the whole prospect had become more hopeful and the climate as it were more favourable to growth than ever before. It is impressive to recall that even Lister himself during all the years of his use of the antiseptic method made no attempt to enter on these new fields, not even on the easiest and most obvious of all—the abdomen.

Evolution of Surgery of the Pharynx.

The major surgery of the pharynx, narrow and sharply limited as its field is, illustrates in the clearest way how surgical progress is governed by the satisfaction of the requirements we have specified as necessary for sound progress. This small region of the body is the frequent seat of diseases that show the ills of the flesh at their worst, for they are repulsive, painful, long drawn out, and mortal. Yet the surgery of it failed entirely to contribute anything to the first

* An address delivered at the Central London Throat Hospital on Oct. 9th.

harvest of the Listerian inspiration, and it is only a slight exaggeration to say that for the first 30 years of modern surgery that of the pharynx showed little sign that the dark ages of surgery were at an end. The reasons for this backwardness are obvious enough and we need refer to only a few of them. The part is difficult to examine, so that the natural history of its diseases was for a long time but vaguely known; it is difficult of access, so that there was no natural method by which the surgeon could expose it and become familiar with the early stages of its morbid conditions as he did so soon in the abdomen; it is infested by infective material which is apt to cause violent and uncontrollable inflammation of the tissues of the neck and thorax; it is the seat of concentrated and important functions, so that large destructive operations can be carried out only at the expense of repulsive and often intolerable mutilation. It is not therefore surprising that not much more than 20 years ago, at a time when abdominal surgery was in the full tide of success, when the surgery of the central nervous system was well under way, and that of the chest already launched, the simplest epithelioma of the lower pharynx meant a certain and painful death, and so essentially trivial an oddity as a pharyngeal pouch meant slow starvation or a rarely risked and critical operation. That this small wild tract of the body has been put in the way to be tamed is the expression of the fact that the requirements necessary for the sound advance of surgery in any region have been or are being in their degree fulfilled. Such progress as has been made is chiefly due to certain definite improvements in knowledge, none of which by itself would have been of decisive value. We now have satisfactory methods of examining the pharynx, and of surgical access to it, we know a good deal about the infectivity of the pharyngeal contents and how it may be controlled, we know when plastic reconstitution of the pharynx is necessary and what can be done with it, and we know enough about the natural history and clinical types of pharyngeal malignant disease to give rational direction to our attack upon it.

Having attempted some orientation of the surgery of the pharynx in relation to the evolution of the art in general, we may now pass on to consider in broad outline the principles on which the practice of this special branch depends. Before doing so however, we may usefully give a few words to defining the limits of our task. The lower pharynx with which we are to be chiefly concerned may be defined roughly as including the epiglottis and extending downwards to the œsophagus. It forms a region which for clinical purposes is conveniently considered by itself and which is concerned in the most interesting problems of pharyngeal surgery. The major surgery of the tract thus limited has only two morbid conditions to deal with—the squamous epithelioma and the pharyngeal pouch. The former is, of course, the more important, as it is by far the more common and by far the more difficult to deal with. The latter will be referred to only in passing, since the problems connected with its treatment may fairly be regarded as solved. A further exercise in preliminary definition is rendered necessary by the ambiguous position occupied at the moment by radiotherapy in the treatment of malignant disease of the pharynx.

Radiotherapy in Malignant Disease of the Pharynx.

It is commonly supposed that the use of radium has greatly simplified the treatment of epithelioma of the pharynx. This supposition is not true. Radium has given us a new and very powerful addition to our means of attack, but so far from simplifying the attack has made it more than ever dependent on experienced judgment and expert handling. It is possible even that up to the present time the total results as to cure or notable periods of freedom from recurrence are actually worse for the introduction of radium, since it seems likely that many patients who might have had a good chance of cure by operation in competent hands have had their chance frittered away in ineffective radium treatment. If this is so it is, of course, only a transient phase, for a proper appreciation of the technical requirements of sound radium treatment is already replacing the cruder view and must in time result in the full benefits of radium being made manifest. At present then it must be insisted on that radium has brought about no notable simplification in the treatment of pharyngeal growths. So far indeed the chief hope of simplification it has given us is that it may render unnecessary the rather elaborate plastic operations for reconstituting the pharynx and œsophagus that are necessary after excision of the post-cricoid carcinoma.

Problem of Surgical Access to the Lower Pharynx.

Some 20 years of experience have established the operation of lateral pharyngotomy by the trans-thyroid route as a method of general usefulness. Its chief characteristic features are: (*a*) the isolation of the area of gland dissection from the visceral compartment of the neck by suture of the sterno-mastoid to the prevertebral muscles; (*b*) the removal of the thyroid ala and the great cornu of the hyoid before the pharynx is opened, so that the tumour can be felt through the intact pharyngeal wall and the necessary incision in the latter properly planned; (*c*) that in early cases after the excision of the growth the wall of the pharynx can be closed and immediate reunion of it obtained; (*d*) that it can be combined with the plastic procedure necessary after excision of post-cricoid and posterior wall tumours.

This operation, apart from its usefulness in actual treatment, has by giving us an adequate method of displaying and exploring the interior of the pharynx contributed indirectly to our knowledge of the clinical types, sites of origin, and modes of spread of pharyngeal epithelioma. It has also aided in establishing the fact that every excision of the posterior pharyngeal wall or of the post-cricoid pharynx must be immediately restored by implantation of a skin flap.

Problem of Control of Infection.

The mortality of operations for malignant disease of the pharynx is considerable, whether the actual treatment of the growth is by excision or radium. The chief factor in this mortality is infection either of the lungs or of the extra-pharyngeal tissues, but in any case due to access of the pharyngeal contents to the infected part. The actual conduct of the operation can undoubtedly reduce the risk of such infections, but it cannot ever exclude it with certainty. While therefore every step of the operation will be oriented towards the limitation of infection, other means must be found of a more general usefulness if the mortality is to be kept below a level prohibitively high.

The infection that follows contamination of a wound by pharyngeal mucus has clinical features and a clinical course that are very characteristic. It is a progressive sloughing cellulitis, non-suppurative

for several days, accompanied by moderate fever for eight to ten days when suppuration and the separation of sloughs begin. It is intolerant of the least restraint of drainage and always involves a risk of serious secondary hæmorrhage. Clinical experience proves that the cause of this characteristic infection is always present in those who have teeth whether the teeth are many or few, or with or without obvious disease; it also proves that in the edentulous the cause of this infection tends to disappear or to be greatly attenuated. Thus, in the aggregate the risks of major operations on the pharynx are very greatly reduced in the edentulous, and there is no general precaution in the preparation of a patient for such an operation that can compare in value with a clearance of the mouth and a delay until the gums are soundly healed.

There are few facts of clinical surgery more firmly established than this relation between the presence of teeth and the liability to sloughing infections of wounds to which the oral or pharyngeal mucus has access; there is certainly none so unquestionably true that is so little valued and acted upon. So much is this the case that it is necessary to speak of the subject with emphasis and without ambiguity. It is very doubtful whether a major operation on the pharynx is ever justifiable in any but an edentulous patient. In the edentulous the dreaded excision of a pharyngeal pouch becomes trivial. After clearance of the mouth I have known ulcerated epitheliomas to heal over, and I have seen an apparently inoperable epithelioma become operable and be cured by operation. This question is quite different from that of clearing the mouth to produce an effect on some general or distant disease. We are not concerned with anything so problematical but with the attempt to get the pharynx into a condition as near surgical cleanliness as we can, and no other precaution for such a purpose has any claim to compare with this one.

Finally, surprising as it may be, it is necessary to lay stress on the fact that if the relative sterility of the mouth is a most important preliminary to any major pharyngeal operation, it is doubly important if radium is to be used. It is perhaps because radium is sometimes regarded as having simplified the treatment of malignant disease of the pharynx that there is a tendency to disregard the stringent necessity for every precaution against infection where it is used. If it is questionable whether any major operation on the pharynx should be done except in the edentulous there can be no doubt that if radium is to be used this precaution is essential to reasonable safety.

Problems of Local Pathology.

It is of but little use to be able to obtain access to a given region of the body with whatever neatness and safety, if we do not know what to do when we get there; and no where is this familiar warning more apt than in the surgery of the pharynx. A knowledge of the natural history of the local diseases—in this case chiefly of the squamous epithelioma—is therefore an essential part of the surgeon's equipment. Our knowledge of the epithelioma as found in the lower pharynx has gathered rapidly since the methods of operative exposure have been put on a sound footing. We now know that it has favourite and characteristic sites of origin, that it appears in types of different malignancy, that it has characteristic modes of spread. Experience has shown that there are cases clinically formidable that lend themselves to easy treatment, and cases clinically mild that are beyond the reach of operation. One of the most encouraging gifts of experience has been the frequency of growths of the lateral wall and of the aryepiglottic fold of a fungating semi-pedunculated type that give excellent results to operative treatment. On the whole it is perhaps nearly true to say that if the lower pharynx were as accessible as the lip, the prognosis of operative treatment of its epitheliomas would probably be in about the same class. Most early cases therefore can be undertaken with reasonable optimism.

A second topic of local pathology that needs a short mention is the question of lymphatic gland infection. When the primary growth is definitely to one side of the middle line a unilateral gland dissection is adequate; this should be done in one operation with the treatment of the primary growth. In my experience the presence of actually palpable moderately enlarged glands on the same side as the tumour does not darken the prognosis so much as it seems commonly regarded as doing.

Our final theme under this heading must be the question how local knowledge of pharyngeal epitheliomas indicates that the actual attack on the growth itself should be made.

The surgery of the pharynx is rather more fortunately placed in this regard than is that of the mouth and jaws, for it is less embarrassed by classical operations inherited from a period of surgery essentially pre-modern. These time-honoured procedures, such as excision of half the tongue, of the whole tongue, of the upper jaw, are primarily of anatomical designing, invented because they were easy to do and not because they were ideally suited to the treatment of any given disease. There is something hostile to the whole spirit of modern surgery in these formal amputations and excisions. Their anatomical design necessarily makes them tend to be unduly mutilating on the one hand, and insufficiently radical on the other. They contrast unpleasantly with what should be our ideal, a procedure closely adapted to the disease in every case and designed to extirpate an individual example of a pathological condition and that alone.

The only legacy of the past with which the modern surgery of the pharynx has to contend is the operation of formal laryngectomy, which is sometimes still used in the treatment of pharyngeal growths arising near the larynx. It is an unfortunate circumstance that this operation is extremely easy to practise, so that there is a tendency for its small legitimate field to be extended unduly. To deal with small juxta-laryngeal growths of the pharynx by a formal laryngectomy is to inflict a serious mutilation without necessity, to sacrifice the advantages of a full preliminary exploration, and very often to do an inadequate removal of the actual growth.

It must be laid down then that the first step in the actual attack on the growth itself must be proper exposure and exploration of the pharynx. This is done at first before the pharynx is opened, because through its thin wall the main features of the site, the size, and extensions of the growth can usually be estimated in broad outline. This procedure is of critical importance, for it will determine the choice that is to be made among three main lines of policy.

(1) If the growth is felt to be small, localised, and movable, the pharynx should be opened, the growth excised, and the pharynx wall sutured. There can be little doubt that at the present time in this class of case straightforward excision gives a good prospect of cure and a better one than is offered by radium.

(2) If the growth is at the opposite extreme of extent and is thus manifestly inoperable, the best

treatment is probably the application of radium without opening the pharynx.

(3) If the growth is of intermediate extent, the decision as to the best treatment will usually have to be postponed until the pharynx has been opened and a more exact examination made. Whether excision or radium be finally decided on, a temporary fistula will have to be established by suturing skin and mucous membrane together.

Prospects of Surgery of the Pharynx.

Since we are here expressly concerned solely with principles I have avoided all questions of operative technique. They are concerned with a different aspect of the subject and can be dealt with usefully only in great detail. We may, however, without leaving the more general aspect of the subject, consider very shortly in conclusion the future prospects of the surgery of pharyngeal malignant disease.

We have seen that there is reason to regard this limited but important branch of surgery as well grounded and therefore capable of expansion. It is still, it must be acknowledged, at a stage in which the surgeon has to console himself for the moderate number of his successes by their brilliant quality, for success means cure without mutilation or disability. Thus, for example, in the first case, and also in the most desperate on which I ever used the trans-thyroid operation, the patients both survive without recurrence, the one after over 20 years, the other after six. In spite of the testimony of this latter case however, and a few others of almost the same severity, it is probable that the very large excising operations will in future be used only when a very experienced judgment can detect the favourable chance in the very unpromising clinical picture. For the cases that formerly could be dealt with only by these heroic operations, to some extent we already have, and certainly in the future shall have, a much better resource in the expert, precise, and enterprising use of radium. To those who do not grudge the learning of an exacting technique and the risk of many disappointments there is here a promising field for courage and ingenuity.

It is to be hoped, however, that the number of cases of the severer type will diminish when the natural history of these growths becomes more generally known and it is learnt that the diagnosis is usually easy at an early stage if one knows what to look for.

The future development of the subject probably lies then, on the one hand, in the exploitation of radium, and on the other in that of early diagnosis. Should the latter be cultivated on an adequate scale, the operative excision of small pharyngeal epitheliomas will probably long remain a legitimate field for the surgical adept and a field in which he may look with confidence for cures with little risk to life and no persistent disability.

HOSPITAL ENLARGEMENTS.—Cardinal Bourne last week laid the foundation-stone of a new wing of the nurses' home at the Hospital of St. John and St. Elizabeth, Grove End-road, N.W.—The Bishop of Barking has dedicated three new maternity wards at the Walthamstow Nursing Home, each containing four beds.—In the same neighbourhood Alderman Mrs. McEntee recently opened a sunlight ward extension at the Brookfield Orthopædic Hospital, Hale End, which has been given by Mr. T. G. Armstrong.—Last week Mrs. A. C. Nicholson opened and the Bishop of Bristol dedicated extensions of Chippenham cottage hospital, which have cost £4330. The enlargements comprise new men's and women's wards, each of eight beds, an out-patient's department, an improved theatre, and new nurse's quarters.—Lady Rogers recently opened a small extension of Helston, Cornwall, war memorial cottage hospital.

THE SIZE OF THE HEALTHY HEART AND ITS MEASUREMENT.

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LONG before the advent of auscultation and percussion, enlargement of the heart was recognised as a manifestation of heart disease. Early writers spoke of aneurysm of the heart, later distinguishing between active and passive aneurysm, and Morgagni, in 1761, first separated hypertrophy from dilatation. The need for some standard of heart size which should differentiate the healthy from the diseased organ became apparent, and Laennec (1819) compared the size of the heart to that of the closed fist of the subject. Lobstein is said to have first suggested the weight of the heart as an index of its size, a method also adopted by Bouillaud, and Bizot first estimated the dimensions of the heart in the cadaver. Both the weight and the size of the heart were studied by Peacock.[17]

With the introduction of auscultation and percussion, enlargement of the heart became a matter of concern to clinicians, though it was long overshadowed by the novel discovery of murmurs. Now that the significance of murmurs is seen in proper perspective, the estimation of the size of the heart is recognised to be of paramount importance, and it is not going too far to say that enlargement of the heart is the most unequivocal single physical sign of heart disease which is generally applicable.

The recognition of a gross degree of enlargement is usually easy, but the detection of slight enlargement is often a matter of considerable difficulty, whatever be the method employed. This difficulty is twofold: first, the size of the heart in health varies between such wide limits that a naturally small heart may enlarge considerably from disease before it will exceed the upper normal limit, and secondly, some degree of experimental error is unavoidable in measuring a deeply seated and constantly moving organ such as the heart.

In other countries, methods of measuring the heart by X rays have been devised and used and many standard tables have been published but, as far as we know, no standard of heart size has been constructed for healthy English subjects. In compiling such a normal standard, it is important that the measurements should be made, not only of healthy hearts, but in healthy subjects. For this reason, hospital patients are unsuitable material on which to base a standard of normality. At the Central Medical Board, R.A.F., we have had the opportunity of measuring the heart by X rays in large numbers of healthy subjects in whom the medical history was known, and who had been carefully and in many cases repeatedly examined.

CLINICAL METHODS OF ESTIMATING SIZE OF HEART.

Every case, before X ray examination, was examined clinically, and an estimate of the size of the heart was made, so that we have been able to assess the degree of accuracy of clinical methods in our own hands. Our experience in this respect has convinced us that the only clinical method of

any practical value in estimating heart size is location of the apex-beat by palpation. This method is approximate, and is frequently inapplicable to obese or emphysematous subjects, but it suffices in the majority of young subjects and in adults of normal build. Certain precautions must be observed. The apex-beat is taken as the left-most point on the chest wall at which a definite lift is imparted to the finger-tip, and not the left-most point at which the cardiac pulsation can be appreciated. When tachycardia is present, or when the heart's action is tumultuous, as in Graves's disease, anæmia, or emotional excitement, the impulse is more widely diffused than normally and the apex-beat may be perceptible to the hand well beyond the left border of the heart as determined by X rays. It is important, therefore, in estimating the size of the heart clinically, to choose a time when the heart is beating quietly and at a normal rate, and to be particularly cautious in deciding that a heart is enlarged under conditions other than these. Dietlen [5] estimated that in about one-third of all cases the apex-beat coincided with the left border of the heart, and that in about two-thirds it failed to do so; but, if the precautions mentioned are observed the size of the heart need seldom be seriously over-estimated. This applies to hearts of approximately normal size, but the larger the heart the less reliable becomes the position of the clinical apex-beat as an index of size. In healthy adults the position of the apex-beat varies from 6·5 to 10·5 cm. (2½ to 4¼ in.) from the mid-line according to the size of the individual. Thus the apex may be over four inches out in a big man and yet the heart be perfectly healthy, whereas in a small man it may be 3½ inches out and yet the heart be diseased. In adult males the nipple is an excellent landmark, as it varies in position with body size, and it is rare to find the apex-beat of a healthy heart beyond the nipple.

We are convinced that percussion is a far less reliable method of estimating the size of the heart than is palpation of the apex-beat, and that, if palpation fails, percussion is unlikely to succeed. As early as 1840, Gendrin advocated location of the apex-beat by palpation as the best method of determining the left border of the heart, as did Constantin Paul [16] in his method of measuring the heart described in 1878, and more recently Sir T. Lewis [13] has criticised percussion of the heart and advocated palpation as a means of estimating its size.

RADIOLOGICAL METHODS.

There are three radiological methods of estimating heart size: namely, radioscopy, teleradiography, and orthodiagraphy. Simple screening enables the size of the heart to be compared with that of the chest, and an experienced observer rarely has difficulty in deciding whether the heart is enlarged or not, but actual measurement is impossible and no permanent record of heart size is obtained for future reference. Teleradiography involves taking a radiogram of the chest with the film at a distance of two metres from the tube. At this distance the rays are nearly parallel and the degree of distortion from divergence of rays is relatively slight, though it cannot be ignored. In the orthodiagraphic method a freely movable tube is used, fitted with a diaphragm by which the rays can be cut down to a narrow beam of one or two inches diameter where they strike the screen, only the central rays being used. The tube movement is always in a plane parallel with the screen, so the beam of rays is always perpendicular to it; by moving this beam round the heart borders and internal surface of the thorax, the outline can be drawn directly on to the screen by a grease pencil or can be marked directly on to paper by a special recording device, as used in the Grœdel orthodiagraph. The different projections of the heart obtained by these three methods are illustrated diagramatically in Fig. 1. The degree of distortion in a 2-metre teleradiogram, in subjects of average size and build, has been calculated by Bardeen [1] from anatomical measurements and he states that a reduction of 3 per cent. in linear measurements and of 6 per cent. in area must be made to obtain the actual size of the heart. Dietlen,[5] Hammer,[9] and others have found an over-estimation of diameter of the heart in the teleradiogram as compared with the orthodiagram, a figure of 1–2·4 cm. in transverse diameter of the heart in the teleradiogram, a figure considerably in excess of Bardeen's theoretical estimate.

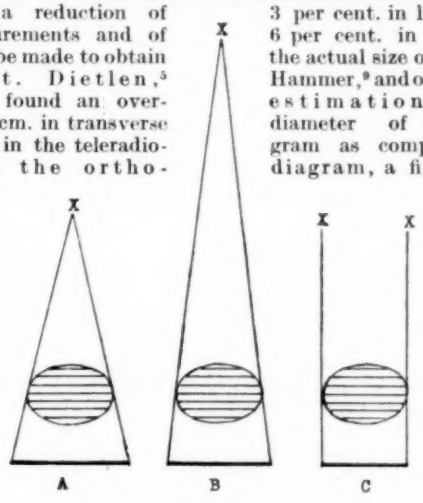


FIG. 1.

Diagram illustrating the relative size of the heart outline (A) at a focal distance of one metre; (B) in a teleradiogram at two metres; (C) in the orthodiagram. X represents the anti-cathode of the tube, and A, B, and C are the projections of the heart on the film or screen.

The degree of distortion depends a good deal on the technique employed and on the size of the chest; probably a reduction of 5–10 per cent. is usually required. Unless the degree of distortion has been calculated for the particular technique employed, teleradiogram measurements should not be compared with orthodiagram measurements but a different standard of normal size should be used for each method. The orthodiagram has been criticised on the grounds of being a subjective method and involving too large a personal factor. Hammer [9] tested his personal experimental error in each method by taking serial records of a number of cases, and he found that the degree of variation between different records of the same case was always greater in teleradiograms than in orthodiagrams. That is to say, in the hands of an expert, the experimental error involved in measuring the heart is greater in teleradiograms than in orthodiagrams. The error in teleradiography arises from the difficulty in accurately centring the patient, in centring the tube always in the same relation to the heart, and in obtaining the records always in the same phase of respiration. In practised hands the orthodiagram is, in our opinion, the quickest, the cheapest, and the most accurate method of measuring the heart.

The orthodiagram is a true-sized silhouette of the heart in a single plane, and its size may be expressed in square measure as area or in linear measure by drawing in certain diameters. The diameters usually employed are shown in Fig. 2. The total transverse diameter (TD) is obtained by adding together the two horizontal diameters (MR + ML)

drawn from the mid-line to the most distant points on the right and left borders respectively. The longitudinal diameter (LD) is obtained by joining the upper point of the right auricle, at its junction with the vascular pedicle, to the apex of the heart.

FIG. 2.

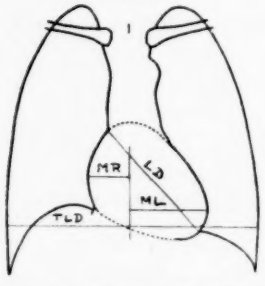


FIG. 3.

FIG. 2.—Normal orthodiagram showing the diameters used in measuring the heart. Transverse diameter = MR + ML. Longitudinal diameter = LD. Transverse lung diameter = TLD. Upper and lower limits of cardiac area indicated by dotted lines.
FIG. 3.—Orthodiagram showing heart outline in full inspiration (inner) and in full expiration (outer).

As the apex may be below diaphragm level, it cannot always be outlined, and it may be invisible in a teleradiogram unless there is gas in the stomach; thus the longitudinal diameter is less reliable than the transverse. The area is obtained by completing arbitrarily the upper and lower boundaries of the heart by curved lines and then measuring the contained area by means of a planimeter, or by squared paper.

The objection to area as an index of heart size is the personal factor involved in drawing in the upper and lower borders of the heart, and the time involved in measurement. We have measured the area by planimeter in all our cases, but we have found it a far less valuable measurement than the transverse diameter, though in the hands of a single observer the experimental error is possibly no greater than in a linear measurement. Eyster regards area of the orthodiagram as slightly better than transverse diameter as an index of heart size, but there must be more variation between different observers than in the case of the linear measurement.

The transverse diameter depends not only on the size but also on the shape and the position of the heart, and the following factors must therefore be taken into account.

1. *Heart Cycle.*—The heart is smaller in systole than in diastole, and the diastolic size should always be measured. In a quietly beating heart, the difference in transverse diameter between systole and diastole is almost negligible, being less than 5 mm., but it is greater in such conditions as aortic incompetence.

2. *Respiration.*—The difference in transverse diameter between full inspiration and full expiration may be as much as 4 cm. (see Fig. 3), but in normal quiet respiration this difference rarely exceeds 5 mm. In making orthodiagrams we always draw the heart in the expiratory phase of quiet breathing, but some take the "mid-respiratory position."

3. *Body Posture.*—Owing to variation in level of the diaphragm, the heart is narrower in the upright than in the horizontal position of the body, and is intermediate in width in the sitting posture. Otten [14] found an average decrease of 0·2 cm. in transverse diameter in changing from lying to sitting, and a similar decrease between sitting and standing. Thus, in comparing the vertical with the horizontal orthodiagram, an allowance of approximately ½ cm. should be made. The horizontal position was used in most of the earlier German orthodiagraphic measurements, but the vertical position is more practical, has now come into general use, and is the one we always employ.

4. *Shape of Chest and Body Build.*—In subjects with long, narrow chests the heart lies more vertically than in those with short, broad chests, so that a heart of given volume will have a smaller transverse diameter in a long, narrow chest than in a short, broad one. The lie of the heart may be estimated approximately by measuring the angle between the longitudinal diameter and the vertical, which varies between 35° and 55°. Apart from the shape of the thorax, the height of the diaphragm is influenced by abdominal distension and obesity. In heart failure the diaphragm ascends from enlargement of the liver and distension of the bowel, so that the heart may become wider, apart from any increase in volume. Examples of differently shaped healthy hearts are illustrated in Figs. 4 and 5. The orthodiagram in Fig. 4 is from a member of the Schneider Cup team, whose physical efficiency was above the average, yet the heart is of vertical type and the transverse diameter much below the mean for his weight. Fig. 5 shows a horizontal type of heart from a healthy man with a tendency to obesity. It is generally recognised that athletes have slightly larger hearts than average, or than those in sedentary occupations, and therefore occupation and habits must be considered in each case when deciding if a heart is enlarged.

FIG. 4.

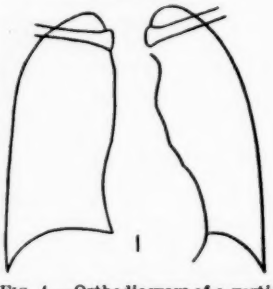


FIG 5.

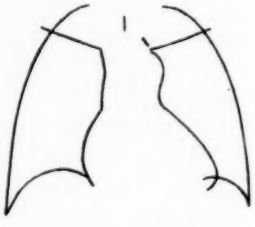


FIG. 4.—Orthodiagram of a vertical type of heart from a member of the Schneider Cup team. Weight 73 kg.; height 178 cm.; transverse diameter 9·7 cm.; cardio-thoracic ratio 38·9 per cent.
FIG. 5.—Orthodiagram of a horizontal type of heart with high diaphragm, from a healthy man of 27 with a tendency to obesity. Weight 78 kg.; height 178 cm.; transverse diameter 13·6 cm.; cardio-thoracic ratio 56·6 per cent.

A Study of Normal Hearts.

For the purpose of obtaining a normal standard, 116 orthodiagrams were measured and correlated with the body measurements, such as weight, height, chest circumference, and body surface area. These records were from healthy adult males aged 18 to 40 years: cadets, candidates for commissions, serving officers, and civil pilots coming up for routine examination at the Central Medical Board. In every case the medical history was known and a careful physical examination was made, often including an electrocardiogram. No heart was accepted for measurement until the history and physical signs had been scrutinized, and any case in which the history, physical signs, blood pressure, or electrocardiogram were not perfectly compatible with health

was rejected. Thus a history of rheumatic fever or of any recent infection, a slightly raised blood pressure, or an abnormal electrocardiogram, were grounds for rejecting the case. Apart from these rejections, the cases measured were as far as possible consecutive ones. The material consisted, therefore, of selected healthy adult males whose freedom from disease seemed unquestionable. The importance of using selected normal subjects as the basis of a standard of normal heart size has been stressed by Eyster and others.

TECHNIQUE USED IN ORTHODIAGRAPHY.

All orthodiagrams were made with the subject standing, and the heart was outlined in diastole and in the expiratory phase of quiet respiration. At least two outlines were made in each case, often by both of us, and no record was accepted unless the transverse diameter in consecutive outlines agreed within 5 mm., though such a degree of divergence was exceptional. In nervous subjects who breathe deeply or rapidly during the examination this degree of accuracy may be unobtainable, owing to rapid respiratory movement of the heart, and such cases were rejected. The total transverse diameter (TD), the longitudinal diameter (LD), the angle between LD and the vertical, the area of the heart and the maximum internal diameter of the thorax, or transverse lung diameter (TLD), were measured. The ratio of the heart transverse diameter to that of the chest—the so-called cardio-thoracic ratio—was calculated in percentage of chest diameter.

CORRELATION OF HEART SIZE WITH BODY SIZE.

Since the earliest attempts, already mentioned, to estimate the normal size of the heart, many anatomical studies have been made of the relation of the heart-weight to the body-weight, and of these the recent paper by Smith [18] may be cited. There is general agreement that the heart-weight varies directly with the body-weight, and Smith gives the ratio of heart- to body-weight as 0·43 per cent. in adult males and as 0·40 per cent. in females; he states that the heart-weight can be predicted from the body-weight with an error of from 8 to 10 per cent. Müller and others have concluded that there is an increase in the relative heart-weight with age, irrespective of the size of the body, but Smith denies this, and attributes Müller's findings to his failure to exclude hypertensive hearts among the older subjects. Height affects the heart-weight only as height affects body-weight.

Radiological measurements of the heart size in life correspond to these anatomical findings. Moritz, who was the first to make orthodiagraphic measurements of the heart, correlated heart size with height, and his method was followed by other German workers. Dietlen first showed that weight was the more important factor in determining heart size, and later investigations have amply confirmed this. Owing to differences in the technique employed the normal values for heart size in relation to body-weight given in different published tables show considerable discrepancy, and this has led to confusion.

Orthodiagraphic measurements are not comparable to those made from teleradiograms, and different values are required for lying, sitting, and standing. Most of the earlier German tables relate to orthodiagrams taken with the subject lying, but the sitting or standing position is universally used to-day, and this applies also to teleradiograms. The difference in transverse diameter in the different body postures has already been mentioned. Most tables give an average, a maximum, and a minimum value of heart TD at different body-weights. Sometimes tables for height are included, and the mean value between that given for weight and that given for height is taken as normal. Others take into account the lie of the heart, predicting a normal transverse diameter for vertical, oblique, and horizontal hearts. In order to combine the factors of weight and height, Smith and Bloedorn [19] suggested body surface area as a suitable index of body size to correlate with heart size, and this has been adopted by Kissane.[12] The recent work of Bardeen [1 2] and of Eyster and various co-workers [6 7 8 10 11] marks a considerable advance on previous methods. Both have based their tables of heart size on formulæ, calculated by statistical methods. Eyster and others made heart and body measurements in groups of carefully selected normal cases and subjected their measurements to elaborate mathematical analysis. Taking transverse diameter or area of the orthodiagram as an index of heart size, and age, height, and weight as variables, they calculated the coefficients of correlation between the various heart and body dimensions, and from these developed formulæ. Thus, for transverse diameter, Eyster's formula is as follows:—

Predicted TD (mm.) $= +0{\cdot}1094 \times \text{age} - 0{\cdot}1941 \times \text{height (cm.)} + 0{\cdot}8179 \times \text{weight (kg.)} + 95{\cdot}8625$.

From this formula, tables have been constructed giving a factor for height and a factor for weight which, added together, give the predicted transverse diameter. Bardeen has developed formulæ for heart silhouette area in relation to body-weight, and has also correlated area with transverse diameter and with heart volume.

RELATION OF TRANSVERSE DIAMETER TO BODY-WEIGHT.

In Table I. our cases are grouped according to body-weight, in divisions of 5 kg. The average age in each weight group was approximately the same, so that the age factor may be ignored. The average transverse diameter increases steadily with the body-weight, but the upper and lower limits in each group overlap considerably. For instance, the maximum TD in the 55–59 kg. group exceeds the minimum TD in the 75–79 kg. group. It is clear, therefore, that a standard of heart size based simply on body-weight will scarcely be of much practical value, owing to the wide range of variation in transverse

TABLE I.

Weight (kilograms)	50–54	55–59	60–64	65–69	70–74	75–79	80–89
Cases	4	20	30	24	19	13	5
TD heart (cm.)—							
Average	10·8	10·9	11·2	11·6	12·1	12·2	13·4
Minimum	9·9	9·9	9·7	10·4	9·7	10·7	12·0
Maximum ..	12·0	11·7	13·0	13·1	13·8	14·0	14·9

TABLE II.

Weight.	Height.	TD.	Weight.	Height.	TD.
kg.	cm.	cm.	kg.	cm.	cm.
55	—	10·7	75	—	12·3
58	172	10·9	78	180	12·5
60	—	11·1	80	—	12·7
63	173	11·3	83	—	12·9
65	—	11·5	85	183	13·1
68	176	11·7	88	—	13·3
70	—	11·9	90	—	13·5
73	177	12·1	—	—	—

TD = transverse diameter.

diameter at each weight. By means of a graph, in which the mean transverse diameter was plotted against body-weight and the curve adjusted to a straight line, Table II. was compiled, giving the average TD for different body-weights. In Table III. the cases are grouped according to size

TABLE III.

TD.	Cases.	Age.	Ht.	Wt.	Chest.	Angle.	Cardiac thoracic ratio.	Body surface area.
cm.			cm.	kg.	cm.	deg.	%	
9·7–10·4	16	24	178	62	84	40	42	1·77
10·5–10·9	19	25	175	62	84	42	44	1·70
11·0–11·4	24	25	173	63	85	45	46	1·74
11·5–11·9	18	24	175	65	86	45	48	1·79
12·0–12·4	16	24	175	70	89	47	48	1·84
12·5–12·9	11	25	175	70	89	50	50	1·84
13·0–14·0	10	30	175	74	90	51	52	1·89
Average of 114 cases	—	25	175	66	86	45	47	1·78

of transverse diameter. This Table shows that body-weight, chest circumference, and cardio-thoracic ratio increase steadily with transverse diameter, but that height does not. The increase in cardio-thoracic ratio is explained by the increase in the angle of the heart's long axis to the vertical; the larger hearts were the more horizontally inclined, so that their transverse diameter increased relative to that of the chest. Height remains fairly constant, but the group with the smallest hearts were actually the tallest. Analysis of the individual weight groups shows clearly the effect of height on transverse diameter. The 60–64 kg. weight group, tabulated below, may be taken as an example.

Weight 60–64 kg.: 30 cases. Average height: 173 cm.
Average TD: 11·2 cm.

Height.	Average TD.	Cases.
Above 175 cm.	10·4 cm.	13
171–175 cm.	11·1 cm.	10
Below 171 cm.	11·7 cm.	7

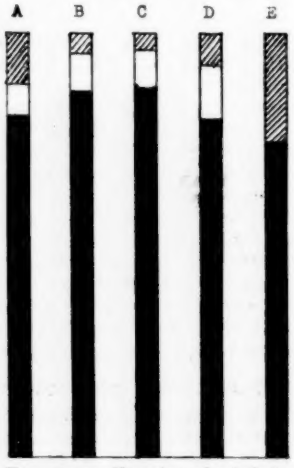
The cases are divided up according to height into those within a range of ±2 cm. of the average height for the weight group, those above and those below these limits. Those taller than average have a smaller transverse diameter, and those shorter than average a larger transverse diameter than the mean for the group, while those within 2 cm. of average height have a transverse diameter approximating to the mean. In other words, at a given weight, the taller the subject the smaller the transverse diameter, and the shorter the subject the larger the transverse diameter. Analysis of the other weight groups showed the same inverse variation of transverse diameter with height. This important fact has not been properly appreciated, though Eyster's tables also show an inverse relation between height and transverse diameter at any given weight. The explanation lies in the fact that the proportion between height and weight is an index of build, and therefore of the shape of the chest and lie of the heart. A man too tall for his height tends to have a long, narrow chest with a vertically lying heart, and a man too short for his weight tends to have a short, broad chest with a horizontally lying heart. A heart of given volume will have a larger transverse diameter when lying horizontally in a broad chest than when lying vertically in a narrow chest. Thus an inverse relation between transverse diameter and height does not imply an inverse relation between heart-volume and height.

CORRELATION OF TRANSVERSE DIAMETER WITH BOTH WEIGHT AND HEIGHT.

Kissane [12] has pointed out the importance of basing the normal standard of heart size on measurements of subjects whose height is correctly proportioned to their weight. He has shown that the range of variation from the mean heart size for body-weight is greater in those whose height and weight are disproportionate than in those of ideal height for weight.

We have analysed our whole series with regard to the effect of the height-weight ratio on transverse diameter in the following way. The average height for each weight group was taken arbitrarily as ideal height for those within that group. Ideal height for weight varies with age and sex, but in a series of young adult males within fairly narrow limits of age the average height of each weight group is quite a good standard of ideal height. The cases were divided into three categories, as follows: (1) those whose height was within a range of ± 2 cm. of ideal height for their weight; (2) those more than 2 cm. above ideal height; (3) those more than 2 cm. below ideal height. In each case the actual transverse diameter was compared to that predicted as normal for body-weight by Table II., and the result was expressed as a ± percentage of the predicted normal transverse diameter, following Eyster's method. If a variation of ± 10 per cent. of the predicted normal transverse diameter is taken as being a reasonable normal range, then such limits include 81 per cent. of hearts in the whole series, 87 per cent. in those of ideal height, 80 per cent. in those too tall, and 74 per cent. in those too short for their weight. In those of ideal height, the average transverse diameter was +0·3 per cent. of predicted normal for weight; in those too tall it was −2·8 per cent.; and in those too short it was +4·4 per cent. The incidence of hearts within a range of ± 10 per cent. of predicted normal, and of hearts larger and smaller than this, is shown graphically in Fig. 6. The distribution of the large hearts—i.e., those over +10 per cent. of predicted normal—is striking. In the whole series 12 per cent., in those of ideal height only 4 per cent., in those too tall 6 per cent., and in those too short 26 per cent., had large hearts. Thus the incidence of large hearts is six times as great in those too short for their weight as in those of ideal height. The distribution of small hearts—i.e., below −10 per cent. of predicted normal—was just the reverse of that of the

FIG. 6.



Transverse diameter charted in terms of plus or minus percentage of predicted normal for body-weight; in black, hearts within plus or minus 10 per cent. of predicted normal, in white, hearts below −10 per cent., and shaded hearts above +10 per cent. of predicted normal. (A) The whole series, (C) those of ideal height for weight, (D) those too tall for their weight, (E) those too short for their weight. In (B) the whole series similarly charted, but using Eyster's prediction from weight and height as the normal in every case

large hearts: in the whole series 7 per cent., in those of ideal height 8 per cent., in those too tall 13 per cent., and in those too short none had small hearts.

For the purpose of comparison, the transverse diameter predicted by Eyster's tables, based on height, weight, and age, was found for every case, and the observed transverse diameter was expressed as a ± percentage of Eyster's predicted normal. Of our whole series, 86 per cent. had hearts within a range of ± 10 per cent. of Eyster's standard, 4·3 per cent. exceeded the +10 per cent. limit, and 9·5 per cent. fell below the −10 per cent. (Fig. 6 (B)). Thus Eyster's prediction of transverse diameter based on height, weight, and age gave better results in our series of normals than did a prediction based on the mean transverse diameter for body-weight, and gave results almost identical when applied to the whole series of cases, with the results of a weight prediction in those of ideal height for weight.

From this we may conclude that the normal transverse diameter may be predicted from body weight alone in those of ideal height for weight, but that in others both height and weight must be taken into account in order to obtain an equally successful prediction. This may be done by using tables based on a formula, such as those constructed by Eyster and his co-workers, or the normal transverse diameter predicted from body weight may be corrected for height when this diverges from the ideal height for body-weight. In our series the average correction required for height was approximately 1 per cent. of predicted transverse diameter for each 2 cm. divergence from ideal height. Thus, to predict the normal transverse diameter for a man 10 cm. below ideal height for his weight, 5 per cent. is added to the transverse diameter normal for his weight. In a man 10 cm. too tall for his weight, 5 per cent. is subtracted from the normal transverse diameter for his weight. Thus a range of ± 10 per cent. of predicted normal transverse diameter for weight in a man of ideal height would correspond to a range of −5 per cent. to +15 per cent. in a man 10 cm. too short, and to a range of −15 per cent. to +5 per cent. in a man 10 cm. too tall. We have tested Eyster's tables on our series of healthy subjects, and they give as successful a prediction of transverse diameter as we believe it is possible to obtain.

There are other possible methods of taking into account the lie of the heart and shape of the chest besides the height-weight proportion. Thus Dietlen gives a different standard of transverse diameter at any weight for the vertical, the average, and the horizontal type of heart. If the angle of the heart's long axis could be accurately measured, a correction for angle could be applied instead of a correction for height. When the apex lies below the diaphragm, however, the angle cannot be accurately measured. Another method would be to find the ideal relation between the transverse diameter of the chest and the height, and apply a correction where necessary. These methods have no advantage over a prediction from height and weight.

The Value of Heart Measurements.

The practical value of heart measurements may be considered under the following three heads:—

1. *How accurately can heart size be measured?* The heart being a three-dimensional organ, its size may be expressed as volume or as weight. Bardeen has checked the relation between heart volume, transverse diameter and area by anatomical measurements in the cadaver, and he found that their interrelation was sufficiently constant to justify the use of transverse diameter and area as an index of heart volume. Palmieri [15] and Berg and Schatzki [3] have devised ingenious and fairly accurate methods of constructing three-dimensional models of the heart by radiological means, and the volume can be estimated from these models. Their methods are too complicated, however, to permit of routine clinical use. For practical purposes radiological measurements of the heart are limited to transverse diameter and area of the frontal silhouette. Area involves, besides the experimental error in obtaining the heart outline, a further error in measuring it, and for this reason we prefer transverse diameter as the index of heart size. The volume of the heart varies directly with the cube of the transverse diameter, so that quite small changes in transverse diameter correspond to considerable changes in volume. According to the size of the heart, an increase of 1 cm. in transverse diameter may correspond to an increase of 50–200 c.cm. in volume. For a heart of average size, an experimental error of 5 mm. in measuring transverse diameter corresponds to an error of 15 per cent. in volume. But the relation of transverse diameter to volume is not a constant one, for it varies with the lie of the heart in the chest. This variation is roughly neutralized if transverse diameter is correlated with both height and weight, but some degree of error must be involved. Probably the maximum error involved in estimating the size of the heart by measuring its transverse diameter is equivalent to 20 per cent. in volume, though the average error should be less than 10 per cent.

2. *How closely can heart size be correlated with body size?* In subjects of ideal height for weight, 87 per cent. had a transverse diameter within a range of ± 10 per cent. of that predicted from body-weight, and 4 per cent. exceeded the upper limit of this range. In those not of ideal height, an almost equally successful prediction of transverse diameter was obtained from both height and weight by means of Eyster's tables or by correcting for height a prediction based on body-weight alone. This applies to a group of healthy adult males within narrow age limits. Had the age limits been wider, and had both sexes been included, the prediction would undoubtedly have been less successful.

3. *What is the value of measurements in separating healthy from diseased hearts?* Eyster [6] has tested the capacity of his tables to separate healthy from diseased hearts by applying his prediction to a series of healthy subjects, and to a series of patients with definite organic heart disease but free from heart failure. Using transverse diameter as the index of heart size, 84 per cent. of healthy hearts fell within a range of ± 10 per cent. of predicted normal size, and 8 per cent. exceeded the upper limit of this range. Of the diseased hearts 22 per cent. fell within a ± 10 per cent. range of normal, and 78 per cent. exceeded the upper limit. It is obvious that heart measurements cannot be applied in a rule-of-thumb manner to separate healthy from diseased hearts, for a diseased heart need not be enlarged—for example in the case of mitral stenosis or of coronary atheroma. Changes in the shape of the heart outline and of its vascular pedicle often precede enlargement of the heart transversely; in mitral stenosis enlargement of the left auricle and pulmonary artery, and in coronary atheroma widening of the aorta, may be detected on screen examination at a stage when measurements correctly demonstrate the absence of transverse enlargement of the heart. We believe that screen examination in the postero-anterior and oblique positions is a more reliable means of recognising

heart disease than is measurement of the orthodiagram. Indeed, we would maintain that simple inspection of the orthodiagram will enable any experienced observer to decide the question of pathological enlargement with a degree of success at least equal to that attained by measurements. This is no argument against measurement of the heart, for the purpose of measurements is to decide the size of the heart in terms of the average normal size for a given individual. The size of the heart, expressed as a ± percentage of the average normal size for weight and height, is useful information, but it must only be considered in relation to the clinical picture as a whole, and not apart from it. For example, a heart of +10 per cent. of predicted normal size in an apparently healthy athlete would not be of much significance, but in a sedentary worker with a history of rheumatic fever, or with a slightly raised blood pressure, it would suggest pathological enlargement.

Summary and Conclusion.

1. Location of the apex-beat by palpation is the most reliable clinical method of measuring the heart, and orthodiagraphy is the simplest and most accurate radiological method.

2. The total transverse diameter is the most reliable index of heart size for practical purposes. Transverse diameter varies directly with body-weight, but not with height. At any given weight, transverse diameter varies inversely with height. Short, broad subjects have wider hearts in portion to body-weight than tall, slender subjects.

3. The normal transverse diameter may be predicted with reasonable accuracy from body-weight in those whose height is ideal for their weight. In others both height and weight must be taken into account in predicting heart size.

4. The observed transverse diameter expressed as a ± percentage of that predicted from weight and height is the best way of indicating heart size. Taking account of both weight and height, about 85 per cent. of normal hearts fall within a range of ± 10 per cent. of the predicted normal, and less than 10 per cent. of hearts exceed the upper limit of ± 10 per cent.

Measurements cannot be applied as a rule-of-thumb method in separating healthy from diseased hearts, but must be considered in relation to the clinical data. In border-line cases changes in the shape of the heart silhouette, viewed from different angles, are likely to be of more value than measurements.

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CEREBRAL TUMOUR AS A CAUSE OF GENERALISED EPILEPTIC ATTACKS OF LONG STANDING.

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In a recent discussion on the mental symptoms associated with cerebral tumour[1] the view was advanced that because the mental symptoms in one case quoted had preceded the signs of raised intracranial pressure by many years, therefore these symptoms could probably not be rightly attributed to the tumour which was later discovered to be present. The present group of cases show that this view would not be justified in respect of epileptic fits, upon grounds of duration of the symptoms alone.

It is a familiar fact that a cerebral tumour may give rise to epileptic fits. It is generally held that such fits are among the later-appearing phenomena of this disease and are due to an increase of cortical irritability consequent upon a rise of intracranial pressure. That such fits may be not generalised but restricted to certain parts of the body and may either remain restricted throughout a series of individual attacks or may later become generalised is also well known. Such focal or Jacksonian attacks may commence with a local aura of a sensory or a motor type, a peculiar sensation of twitching of some one part of the body. This may spread progressively so that other parts are involved in a definite sequence. This spread or march of the attack may stop short of the mid-line or may pass across to the other side, so that the fit becomes generalised and consciousness is commonly lost. Upon recovery there is frequently a relatively persistent impairment of function, maximal in the neighbourhood of the point of origin of the attack.

The common association between a given focal origin of the symptoms and the proximity of the tumour to a certain region of the cerebral cortex determines the importance of such attacks as aids to localisation. Owing to this importance, the above relation has probably been too much stressed, so that it is sometimes assumed that focal Jacksonian attacks indicate the presence of a focal cerebral lesion and that, when such a lesion gives rise to epileptic attacks, these tend to be of a focal character. Neither of these assumptions is justified. Focal attacks may occur repeatedly over an indefinite period without the detection of any other signs of a local lesion during life and without the discovery of any such lesion at post-mortem examination.

It is not as commonly recognised that, in a patient who has a slowly growing cerebral tumour, generalised convulsions, with no local aura and no focal incidence of the sensory or motor phenomena and followed by no local impairment of function, may be present for many years before any other signs of the disease are detected. Such patients are treated during this period of several years as cases of idiopathic epilepsy. The following cases illustrate this point:—

Case Histories.

Case 1, a window cleaner, aged 34, first came under observation in the out-patient department of the Hospital for Epilepsy and Paralysis, Maida Vale, in March, 1927. He had then had epileptic attacks with loss of consciousness,

[1] Proc. Roy. Soc. Med., 1931, p. 1005

cyanosis, and generalised convulsions since 1909. In 1915 he had been discharged from the army for these attacks, and since 1921 they had become more frequent, occurring in bouts of several fits at intervals of one to two months. They were frequently preceded by some difficulty in speaking and more often still followed by aphasia. Examination in March, 1927, revealed no abnormal signs of nervous disease, beyond slight fullness of the retinal veins, better marked in the left eye.

He was admitted, and remained an in-patient for the following six weeks. During this period he had several generalised epileptic attacks, and one attack which consisted in a period of unresponsiveness during which he muttered incoherently in an undertone. No preceding or following dysphasia or aphasia was noticed. His blood Wassermann reaction was negative and the cerebro-spinal fluid was free from cells and had a normal protein content. Radiographic examination of his skull revealed no abnormality. The ophthalmic surgeon reported that his visual fields were full and the fundus oculi normal. When shown at a clinical meeting of the physicians of the hospital he was held to be probably a case of idiopathic epilepsy.

After discharge he remained under treatment as an out-patient, receiving luminal and bromides. The attacks increased gradually in frequency and, when he was examined in the middle of September, it was noticed that the grasp of his right hand was weak, that the arm tendon reflexes were increased on the right side, and that the abdominal responses were diminished on the left, but there was no spasticity or sensory loss and the plantar responses were normal. The fundus oculi were again reported as normal, and were still normal in October. In December he began to have severe headaches and still more frequent fits. In January he was admitted to the wards of the London Hospital under Mr. Hugh Cairns, who has kindly supplied the following particulars of his treatment there. At operation the left cerebral hemisphere was explored but no tumour was found. Post-mortem examination revealed a large glioma in the left occipital and posterior parietal lobes, for the most part subcortical.

CASE 2, a clerk, aged 39, had had fits for ten years. In 1920, ten years before examination, he began to have epileptic attacks with no warning or aura, with loss of consciousness and generalised convulsions. These occurred at first every six months, but they became more frequent during the last five years, averaging one every six weeks. During this latter period also there were many petit mal attacks, averaging two to three per day. For the last two years he had infrequent frontal headaches without nausea or vomiting. The first added symptoms occurred early in September, 1930, when he complained of occasional double vision. On Sept. 29th he was found unconscious in a generalised epileptic fit and taken to the Mayday Road Hospital, Croydon.. While an in-patient of that hospital he had several petit mal attacks and one attack of generalised convulsions and loss of consciousness without any aura or focal signs. He was found to have bilateral papilloedema, and an X ray photograph of his skull showed enlargement of the sella turcica and destruction of the clinoid process.

When examined on admission to the Hospital for Epilepsy and Paralysis, Maida Vale, on Dec. 4th, he was a healthy looking man with no defect of consciousness, intellect, or emotional control. He had a considerable degree of motor aphasia, chiefly of the nominal type, but no defect in understanding spoken words, although he had complete alexia. His visual acuity was 6/9 right and left. There was three dioptres of swelling of the optic discs with congestion of the retinal veins. He had occasional diplopia, associated with a divergent strabismus of the right eye. There was also complete right hemianopia with a few degrees of sparing of macular vision. He had some weakness of the right side of his face. His left arm was normal. On the right he showed impairment of finger movements and falling-away of the extended arm and hand, slight spasticity and increase of the tendon reflexes. The legs and some impairment of independent toe movements on the right, with slight spasticity and bilateral increases of the tendon reflexes. The plantar responses were flexor and the abdominal reflexes all brisk and equal. Light touches were everywhere appreciated and correctly localised. There was no impairment of recognition of solid form with the right hand and no diminution of sensibility to pin-prick or hot and cold stimuli. Two-point discrimination was correct at one centimetre on the left palm, but incorrect at distances of separation less than three centimetres on the right palm.

On Dec. 8th Mr. A. S. Blundell Bankart performed parieto-occipital decompression on the left side. The dura was under great tension and the cortical vessels over the flattened left occipital convolutions were much dilated. The left lateral ventricle was punctured and 2 c.cm. of cerebro-spinal fluid flowed freely from the needle; after this no more fluid could be obtained with the needle in any position. Since this operation the patient has made a gradual recovery from the complete right hemiplegia and hemianæsthesia which immediately followed. At no time have his plantar responses been extensor in type, but the abdominal reflexes have been absent in the lower quadrant and diminished in the upper quadrant on the right side.

CASE 3, a painter, aged 29, was admitted on Nov. 10th, 1930. Seven years before he had fallen from a ladder (25 feet) and been unconscious for 45 minutes. He had had no immediate ill-effects from this accident. Five years before he had had his first generalised epileptic attack. Since that time fits had recurred at intervals of six months until the last nine months, during which period they had been recurring monthly. Each attack was preceded by a momentary feeling of mental vacancy or unreality. Consciousness was lost and completely generalised convulsions followed. He recovered after about five minutes and the only sequel of the attack was a frontal headache.

Examination on admission to the Hospital for Epilepsy and Paralysis, Maida Vale, on Nov. 10th, revealed the following particulars.

He was a well-nourished, healthy looking man with normal memory, intelligence, and emotional control. His visual acuity was 6/12 on the right and 6/18 on the left. There was bilateral papilloedema of 5 D, but no diplopia. The pupils were normal. There was bilateral external rectus weakness, better marked on the left side. He showed no sensory impairment over the face, but had deviation of the lower jaw to the left on opening against resistance, and slight weakness of the left side of his face. Weakness and impairment of fine movements on the left side were shown more in the movements of the legs and toes than in those of the arm and fingers. There was slight spasticity of the left limbs, more in the leg. The tendon reflexes were brisk and equal in the arms, but bilaterally exaggerated in the legs. The plantar response was extensor on the left. Abdominal responses were present but tired more easily on the left. The blood Wassermann reaction was negative.

On Nov. 17th his skull was decompressed over the right frontal region. This revealed great tension of the dura, with flattening and softening of the cerebral convolutions of the right frontal lobe. Following the operation, the left facial weakness became more marked and there was a transitory complete flaccid paralysis of the left arm lasting for a week only. He was discharged from the hospital on Dec. 21st with good power in all four limbs but a residual slight impairment of finger and toe movements. His gait was normal. The papilloedema had completely subsided.

CASE 4, a stable hand, aged 47, first appeared in the out-patient department in December, 1929, complaining of generalised epileptic convulsions of three years' duration. These had always occurred in the evening and were preceded by no local warning or aura. Consciousness was lost and there was tonic and clonic spasm, generalised throughout the body. On recovering consciousness he felt normal except for drowsiness and had no residual motor or sensory defects. During the preceding four months he had had occasional frontal headaches which were very severe but not associated with nausea or vomiting.

Examination on admission to the Hospital for Epilepsy and Paralysis, Maida Vale, on July 9th, 1930, revealed the following condition. He was a man of good physique. There was considerable mental retardation and emotional facility, with much impairment of memory for both recent and past events and considerable disorientation in time. His visual acuity was 6/9 on the right and 6/6 on the left. There was no diplopia. The visual fields were normal. There was early papilloedema, with more swelling and slight hæmorrhages on the right side only. The external ocular movements were full, with no nystagmus. There was upper motor neurone weakness of the left face and slight spastic weakness of the left arm and leg, with incoördination and static tremor of the left arm. The tendon reflexes were exaggerated on the left side in both arm and leg. There was persistent ankle- and knee-clonus on the left side, and the plantar responses were both flexor. The abdominal responses were diminished on the left. There was no trace of sensory defect. He had apathetic incontinence of urine. His blood pressure was 132/80 mm. Hg.

During his stay in the hospital his mental condition deteriorated, and the facial weakness and impairment of movements in the left arm became more marked. He had several severe right frontal headaches and the left plantar responses became at times extensor in type. He was operated upon on Nov. 9th and a cyst of the right frontal lobe was discovered.

STATUS EPILEPTICUS ASSOCIATED WITH GLIOMA IN THE LEFT HEMISPHERE.

CASE 5, an unmarried female typist, aged 32, was admitted to University College Hospital on July 11th, 1928, under Dr. Batty Shaw, in status epilepticus. While at work as a clerk in the railway station office she suddenly became

unconscious without any warning at 1.45 P.M. She was convulsed repeatedly at intervals without regaining consciousness and was seen in the casualty department at University College Hospital in this condition at 3.45 P.M. During the period of status epilepticus each attack lasted about three minutes with five or ten minutes' interval, without return of consciousness. Each attack began with a general stiffening of the musculature followed by generalised clonic convulsions. The convulsions continued for three hours, until 4.55 P.M. Her previous health had been excellent and she had had no warning of the onset of any serious complaint.

On examination next day she was semi-comatose, incontinent of urine and fæces, but inclined to be restless. There was no head retraction. Her temperature was 99·8°, her respirations 28 per minute, her pulse-rate 96, and her blood pressure 90 mm. Hg. There was no abnormality of discs, retinæ, or vessels. There was no impairment of function of any of the cranial nerves. No voluntary movements were made on request. She showed no asymmetry of tone in the limbs and no spasticity. The arm tendon reflexes were brisk and equal; the knee-jerks and ankle-jerks increased and equal, without clonus; the abdominal responses all absent, and the plantar responses flexor. There was incontinence of urine and fæces. She resented pin-pricks wherever applied. The pulmonary, cardiovascular, alimentary, and urinary systems showed no abnormality.

On July 13th the patient woke up at 4 A.M. with a shout and was found to be unconscious and in general convulsions. She had ten generalised epileptic attacks between this time and 10 A.M. At 10 A.M. she was still comatose and had been incontinent during the attacks. The tongue had not been bitten. The fits recurred at 8.50 P.M. and lasted until 9.20 P.M. On July 14th she had one fit, similar to the previous ones, at 1.15 A.M. On July 15th she was still incontinent of urine and fæces. In the afternoon at 3.45 P.M. she had another generalised convulsion with loss of consciousness, lasting only about two minutes. During this attack she was incontinent of urine. By July 17th she was sufficiently alert to answer questions, and by July 21st she was no longer incontinent. On July 24th she complained of a feeling of fullness in the head. The pupils reacted well to light, but poorly on accommodation. The tendon reflexes were all very brisk but equal. The abdominal responses were all present and equal. The plantar responses were plantar-flexor. On July 31st the patient was discharged from hospital. She still showed a little mental retardation, which was attributed to her deafness.

Lumbar puncture on July 12th and 19th showed no increase of pressure; 14 c.cm. of clear fluid were withdrawn. This contained 14 white cells per c.mm., mostly lymphocytes, and gave no growth on culture. The Wassermann reaction was negative. A catheter specimen of urine showed no abnormalities. Her blood-urea was 30 mg. per 100 c.cm. Her blood-sugar curve with the glucose tolerance test was normal and the urine remained free from sugar after 40 g. of glucose by the mouth. X ray of her chest showed no evidence of pulmonary disease. The ophthalmologist reported on July 12th that the fundi and media were normal. The aural surgeon reported that the tympanic membranes were intact and showed no signs of past or recent suppuration.

After discharge from the hospital she gradually recovered her general strength and returned to work in October, 1928. She remained at work feeling perfectly well until Feb. 23rd, 1929, when she was said to collapse. For about a week she remained semi-conscious, not speaking but taking fluids by the mouth. She was occasionally incontinent and did not appear to recognise her relatives or to understand what was said to her. Subsequently she had several attacks of unconsciousness, lasting from a few minutes up to two days, after each of which she made a complete recovery. She also had attacks of stiffness and twitching in the right hand, which led her to make grasping movements with the hand in order to relieve the stiffness. During April the attacks of unconsciousness increased in frequency until April 20th, when she became semi-comatose. From March 4th to 25th she was an in-patient in the National Hospital, Queen-square, where she had several attacks of generalised convulsions but no organic signs of nervous disease; the fundi oculi were reported to be normal and lumbar puncture gave a clear normal fluid not under increased pressure. She was thought to be a case of petit mal followed by hysterical manifestations. She was readmitted in a state of coma to University College Hospital on April 28th under Mr. Julian Taylor. She lay on her back with her eyes tightly closed, and the only movement seen was an occasional screwing-up of the eyes and wrinkling of the forehead, suggesting that she was suffering from headache. She could be rouse by shaking but made no attempt to speak. The pupils were equal, central, and circular, and both rather dilated; the reaction to light was brisk. There was advanced papilloedema with three dioptres of swelling on the right and four on the left. The cranial nerves showed no abnormality. All four limbs were slightly spastic, with no detectable difference in tone on the two sides. The tendon reflexes were all brisk and equal. The abdominal responses were all diminished but equal. The plantar responses were extensor on the left and equivocal on the right.

Half an hour after admission the patient became cyanosed and cold and ceased to breath. Artificial respiration was commenced and had to be continued, as normal breathing was never resumed. Intranasal oxygen was administered, and 30 c.cm. of 35 per cent. sterile saline was given intravenously without any effect. The pulse-rate remained at 80 but the pulse was of poor volume. She was taken to the operating theatre and a left subtemporal decompression opening was made. The dura bulged with great increase of intracranial pressure. An effort was made to puncture the lateral ventricle, but it failed. No tumour was located.

Post-mortem report.—A large glioma into which hæmorrhage had occurred was found to occupy practically the whole of the left cerebral hemisphere in front of the Rolandic fissure.

Conclusions.

These cases show that it is possible for a cerebral tumour to give rise to generalised convulsions and to status epilepticus for many years (in Case 1 for 18 years) before any other signs indicating a local cerebral lesion are detected. In general it may be stated that such tumours are slow-growing and do not originate in, but beneath, the cerebral convolutions. The fits cannot be rightly regarded as resulting from a rise in intracranial pressure, since they may be present for many years before other signs of such a rise are present, and also because they do not increase either in frequency or in severity when a rise in intracranial pressure later supervenes.

The inference drawn from these considerations is that when convulsions commence and occur repeatedly in persons of middle age—even though the convulsions are generalised in character and leave behind them no local impairment of function—they should be regarded as possibly resulting from an intracranial tumour and the patient should be kept under repeated observation, which may only after several years discover definite signs indicating the nature of the lesion.

THE OCCURRENCE OF SCARLATINAL TYPES OF STREPTOCOCCI IN NON-SCARLATINAL INFECTIONS.

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MOST of the serological work on the scarlatinal streptococci in this country has been done by James,[1] Smith,[2] and Griffith.[3 4] Griffith recognised four main serological types of scarlatinal streptococci, which he designated I., II., III., and IV., and those strains not falling into these types were classed as heterogeneous. During the past four years I have been investigating, in conjunction with Dr. W. Gunn,[5] the incidence of the various types of scarlatinal streptococci in several series of consecutive cases of scarlet fever, in order to try and find what correlation, if any, existed between the type of infecting organisms and the clinical severity of the disease, complications, secondary infections, and relapses. Nasal and throat swabs from 400 patients suffering from scarlet fever have been cultured, and the hæmolytic streptococci isolated have been investigated serologically by agglutination tests against specific sera prepared for the four types of scarlatinal streptococci by intravenous inoculation of rabbits with dead and living

suspensions of the respective strains. The results of this investigation, as regards the distribution of the types, are shown in Table I., which includes two series

TABLE I.—*Distribution of Scarlatinal Types of Streptococci from 600 Cases of Scarlet Fever.*

Year.	Cases.	Percentage of types.					
		I.	II.	III.	IV.	Het.	Neg.
1926 ..	*100	2	34	17	23	17	7
1927 ..	*100	8	14	26	12	31	9
1928 ..	200	9	25	17	5	36	8
1929 ..	100	18	20	22	3	36	1
1930 ..	100	17	19	19	7	35	3
1926–30	600	10·8	22·4	20·2	10	31	5·6

Types I., II., III., IV. .. .. 63·4 per cent.
Het. = heterogeneous types .. .. 31·0 ,,
Neg. = negative .. .. 5·6 ,,
* Cases investigated by Griffith and Gunn.

of 100 cases investigated by Griffith and Gunn [6 7] in 1926 and 1927. It will be seen that 63 per cent. of hæmolytic streptococci isolated from scarlatinal patients can be placed serologically in one or other of the four main types, while 31 per cent. fall into the heterogeneous group.

A SERIES OF NON-SCARLATINAL INFECTIONS.

Arising from this investigation it was thought to be of interest to test in a similar manner strains of hæmolytic streptococci isolated from infections other than scarlet fever, in order to find what proportion of them could be placed in the four main types. For the purpose all hæmolytic streptococci isolated from routine specimens, other than those from frank scarlet fever, were examined. In all 215 strains have been tested, and Table II. shows the source of the

TABLE II.—*Showing Sources of 215 Strains of Hæmolytic Streptococci.*

Sources.	Strains.	Sources.	Strains.
Nose	31	Sputum	4
Throat	75	Wounds	2
Osteomyelitis ..	5	T.B. sinuses ..	12
Abscesses	17	Fæces	3
Pleural fluid ..	19	Spleen (post mortem)	2
Uterine cervix ..	7	Lung puncture ..	1
Ear and mastoid ..	11	Urine	15
Blood culture ..	6		
Cerebro-spinal fluid ..	5	Total	215

organisms and the number obtained from each source. The outstanding condition which has not been met with in this series, and from which no strains have been isolated, is erysipelas, although seven strains from outside sources were tested, and all were placed in the heterogeneous group. Nasal and throat strains account for about half of the total, and the majority of these strains were isolated from patients suffering from diphtheria; the strains isolated from the uterine cervix were all from patients suffering from puerperal fever; one strain from the spleen (post mortem), and one from blood culture were from the same case of septicæmia, while the lung puncture strain was from a case of broncho-pneumonia following measles.

The results of the serological examination of these 215 strains showed that 27 strains (12·5 per cent.) could be classed as belonging to one or other of the four main types of scarlatinal streptococci. The histories of the patients from whom these 27 strains had been isolated were inquired into more closely, and it was found that 19 out of the 27 patients had a history of recent infection with scarlet fever, or of contact with patients suffering from scarlet fever (one strain was from tonsillitis in a medical officer in charge of scarlatinal wards). Table III. (A) represents

TABLE III.—*Showing Sources of Scarlatinal Types of Streptococci, Isolated from Cases* (A) *with and* (B) *without History of Scarlet Fever.*

A.—WITH HISTORY OF SCARLET FEVER.

Type.	Throat.	Nose.	Abscess.	Empyema.	Mastoid.	C.-spinal fluid.	Urine.	Blood culture.	Total.
I.	2	2	2	2	1	–	–	–	9
II.	–	–	2	1	2	1	–	–	6
III.	–	1	–	–	–	1	1	1	4
IV.	–	–	–	–	–	–	–	–	–

B.—NO HISTORY OF SCARLET FEVER.

Type.	Throat.	Uterine cervix.	Blood culture.	Empyema	Total.
I. ..	1 (*b*)	1 (*a*)	1	1	4
II. ..	–	1	–	1	2
III. ..	1 (*d*)	1 (*c*)	–	–	2
IV. ..	–	–	–	–	–

(*a*) Strain isolated from a patient with puerperal fever, who was attended by the midwife from whose throat (*b*) strain was isolated.
(*c*) Strain isolated from a patient with puerperal fever, who was attended by the midwife from whose throat (*d*) strain was isolated.

the distribution of these 19 strains among the four types, and shows the source of the organisms. The chief point of interest, to which reference is made later, is the absence of a type IV. strain.

When these 27 strains had been eliminated, there were left, out of a total of 196, eight strains which could be typed serologically, and in which no history of scarlatina could be traced—a total of about 4 per cent. Table III. (B) shows the distribution of these strains among the four types, and also the sources of the organisms. It may again be noted that there are no type IV. strains, and this finding is in agreement with the views of Gunn and Griffith,[7] and Allison and Gunn,[5] that type IV. streptococcus is associated with a very mild form of scarlatina of the type sometimes called "para-scarlet" by clinicians, that it never gives rise per se to complications, and has never been found as a secondary infecting agent in cases of scarlatina suffering from primary infection with another type. On the other hand, as it occurs in a mild form of the disease it does not appear to give rise to such a high immunity, and patients having a primary type IV. infection appear to be more susceptible to secondary infections—e.g., tonsillitis, adenitis, rhinitis, &c., due to infection in the ward from a different and more virulent type of scarlatinal streptococcus.

In Table III. (B) the type I. strains from blood culture and empyema were both isolated from cases of septicæmia. Type II. strain from empyema was from a case of measles, and the type II. strain from the uterine cervix was from a case of puerperal sepsis. The chief interest, however, lies in the two type I. strains from throat and uterine cervix, and the two type III. strains from similar sources. Both the strains from the uterine cervix were isolated from patients sent into hospital suffering from puerperal fever, and both the throat strains were isolated from midwives in attendance on the respective cases; one of the two midwives had nasal catarrh, but the other one was reported as normal. These

two pairs of cases are of interest in that they agree with the views expressed by Armstrong,[8] King,[9] and others, that puerperal infection may arise by infection from the throats of persons in attendance on the patients; they also corroborate the results recently shown by Smith,[10] and support the recommendation of the Ministry of Health in the Interim Maternal Mortality Report (1930) that there should be a wider use of mask and more effective antiseptic precautions by doctors and midwives in attendance on midwifery cases. Infection of the puerperal patient by strains of streptococci associated with scarlatina from the throats of persons in attendance, as in the above-mentioned cases, may account for cases of puerperal scarlet fever which sometimes occur.

The strains of type I. and type III. scarlatinal streptococci isolated from throat and uterine cervix were obtained during an investigation of swabs from the throats of outside attendants on puerperal cases admitted to the puerperal fever unit of the North-Western Fever Hospital, and swabs from the patients were also examined after admission to hospital. During the course of the investigation it was found difficult in many cases to obtain swabs other than from the throat of the midwife in attendance, and in only a small minority of cases were swabs from the doctor's throat obtainable. In a number of cases hæmolytic streptococci were isolated both from the throat of the midwife or doctor attending the patient, and from the uterine cervix of the patient, but apart from the two pairs of cases already mentioned, out of a total of about 30 none of the others was serologically correlated, as the organisms were tested only against the four type sera for scarlatinal streptococci.

It has already been pointed out that 63 per cent. of hæmolytic streptococci from scarlatinal patients can be placed in the four serological types, and 31 per cent. are classed as heterogeneous. Among the strains under investigation, 8 out of 196 (4 per cent.) from non-scarlatinal sources (Table III.B) were typed, but it is probable that there may have been some heterogeneous strains of scarlatinal streptococci which were unrecognised, and if they occurred in the same proportion as in scarlatina the total of scarlatinal strains would be raised to 12 (6 per cent.).

In a series of 100 consecutive cases of diphtheria, hæmolytic streptococci were isolated from the nose or throat of 62 on admission to hospital, and in a similar series of 100 cases of measles hæmolytic streptococci were isolated from 32, but none of the 94 strains could be placed in any of the four main types of scarlatinal streptococci. This does not prove that scarlatinal types of streptococci do not occur in measles or diphtheria, as Table III.(B) showed a type II. strain isolated from an empyema following measles, and apart from these two series of cases, a type II. strain was also isolated from the throat in a case of diphtheria; it is probable that such strains are associated with outbreaks of scarlatina in diphtheria and measles wards.

The figures from these three series suggest that scarlatinal streptococci have a high degree of specificity, as out of a total of 396 strains from non-scarlatinal sources, only eight strains (2·02 per cent.) were found to belong to one or other of the four main types of scarlatinal streptococci, and even if heterogeneous strains of scarlatinal streptococci were present in the same proportion as in scarlet fever swabs (see Table I.), the total number of scarlatinal strains would be only 12 (3·03 per cent.).

SUMMARY.

1. Out of a total of 396 strains of hæmolytic streptococci, isolated from non-scarlatinal infections, only eight (2 per cent.) were found to belong to one or other of the four main serological types of scarlatinal streptococci. The results indicate the high degree of specificity of the scarlatinal streptococci, as 63 per cent. of hæmolytic streptococci from scarlatinal patients can be typed serologically.

2. Among the eight typed strains, a type I. strain and a type III. strain were isolated from uterine cervical swabs in cases of puerperal infection, while a type I. strain and a type III. strain were isolated from throat swabs of midwives in attendance on the respective patients. These results corroborate those recently shown by Smith, and support the view of many clinicians, that puerperal infection may arise by infection from the air passages of persons in attendance on the patients.

3. From 100 consecutive cases of diphtheria and 100 consecutive cases of measles, 62 strains and 32 strains respectively of hæmolytic streptococci were isolated, but none were placed in any of the main serological types of scarlatinal streptococci.

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A CASE OF MULTIPLE PERSONALITY.

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A TRUE splitting of personality is sufficiently rare to warrant a somewhat detailed description of a case which approximates very closely to the classical example of Miss Beauchamp described by Morton Prince.

In January, 1927, an unmarried woman, aged 37, came to me complaining of complete lapses of consciousness. She described these lapses as periods in her life of which she was completely ignorant but knew that during these periods someone performed actions, and wrote letters, antagonistic to her.

HISTORY OF THE CASE.

I am indebted to Dr. Richard Eager, superintendent of the Devon Mental Hospital, for supplying me with notes on her family and personal history:—

Her father died in 1891 from general paralysis at the age of 36 in the Devon Mental Hospital. From Sept. 6th, 1915, to August 1st, 1916, she was a patient in the Devon Mental Hospital; she had been certified as depressed and suicidal, having swallowed a packet of pins. She was described as neurotic and introspective, and in May, 1914, had been charged with writing letters about herself and accusing someone else of the offence. During her stay in the hospital she frequently spoke of suicide, and on occasions had inflicted slight wounds on her neck, wrists, and abdomen.

On Oct. 7th, 1915, she said she was a dual personality; one person by day and another by night.

Dr. Eager states that during her stay in hospital she gained somewhat in weight, but showed herself to be a highly strung nervous person, always complaining of some

ache or illness which could not be accounted for and generally speaking, craving for sympathy and attention.

On her discharge from the Devon Mental Hospital she was sent to Dr. W. H. B. Stoddart at St. Thomas's Hospital, and I am much indebted to him for allowing me to make use of his notes and for the loan of letters and photographs.

During 1916 and 1917 several different personalities were discovered by means of hypnosis. The outstanding personality appears to have been that of "Miss Dignity" which, it is to be observed, was the only secondary personality revealed when the patient was under my care. Dr. Stoddart states that in her one self there were seven or eight different personalities who were all ignorant of what any of the others did. Any one of them, could be called up at any time, but in ordinary conversation the casual observer would be in touch with "Mabel" who, presumably, is the real self. One and another would keep popping up and any one of them would hear only part of a conversation. Even the handwriting of the different personalities was quite different. It was observed that:

(1) "Mabel" herself is a good, patient, moral, and economical soul without many faults but usually unhappy.
(2) "Miss Dignity" is a personality who considers it her duty to do all in her power to hurt Mabel. From time to time she has been persuaded to do good works, even to the extent of helping Mabel, but there was a persistent tendency to relapse.
(3) "Biddy" is a bright, cheerful, laughing, helpful personality.
(4) "Hope" and (5) "Faith" are harmless and appear but seldom.
(6) "Dame Trot" is similar.
(7) "Miss Take" was so named because when she first appeared she said that she did not know what her name was but that she was "just a mistake."
(8) Another unnamed one with an evil expression had been observed.

After the position had been explained to them some were more ready than others to accept their identity with Mabel. They were truthful, any one of them confessing to have done any given thing, while all the others would deny it quite truthfully because they knew nothing about it. Miss Dignity, for example, confessed that it was she who wrote the letters that led to the law case in 1914.

Miss Dignity periodically tore up Mabel's clothing, threw away her jewellery, and tore up her money, all of malice aforethought. Some of the others had occasionally torn up money, thinking that it was valueless paper because they did not know that there was a war and did not recognise the meaning of paper money. They did not, however, repeat the offence after it had been explained to them.

Dignity would get very malicious if she was not called up for some time. At one time she had torn up so much of Mabel's underclothing that she was unable to keep warm. On another occasion Dignity had thrown so much of Mabel's money away that she had to live on bread and one cup of tea a day. During this time she was in a very bad physical condition and suffered from hysterical loss of voice and some leg paralysis.

The letters from the different personalities to Mabel are in varied handwriting, some of them being unformed and childish. There was one from Dignity in which she urged Mabel to commit suicide and said that she enclosed a packet of poison.

LATER DEVELOPMENTS.

Ten years later the patient came under my care and was at that time aware of only one strange personality. This was the original Miss Dignity who was still employing the same virulent methods of persecution against Mabel. Several letters were produced in the handwriting peculiar to Dignity and containing threats directed against Mabel's social and religious life. Dignity was still busy tearing up her clothes, smashing her ornaments, hiding or destroying valued possessions, and misbehaving herself generally.

Between January and June, 1927, she came to my consulting room 28 times. Under hypnosis she would at once assume another personality during which period her speech, expression, and whole demeanour would change in a most remarkable way. On five occasions she entered my room as Dignity and under hypnosis would resume her real self as I knew it. One day she complained of severe pain on sitting down and walking which she failed to account for. When hypnotised Dignity told me that she had inserted a broken wineglass in her vagina to annoy Mabel. This story was afterwards verified and the pieces of glass removed.

The conscious mental reactions of the two personalities were strikingly opposed. Mabel was a strict Roman Catholic with high ideals, and she tried to live up to her principles. Narcissism was a very prominent feature, however, and she was continually seeking sympathy and protection from the persecutions of Dignity. It was difficult for her to believe that her second self was really only a part of her own abnormal mind. She reluctantly informed me, however, that in her childhood days her father was in the habit of calling her "Little Miss Dignity." In the part of Dignity the instinctive side gains an important outlet, and through this channel the ego is able to find much satisfaction in the fulfilment of its repressed wishes. Dignity was in conflict with society, and therefore very antagonistic to Mabel and her strict religious life. Dignity was very negative to me, and was continually trying to prevent my attempts to destroy her personality by fusing it with Mabel's. To Dignity this meant renunciation and the destruction of her pleasure principle. This second personality possessed well-developed erotic tendencies which were not apparent in Mabel. She admitted, for instance, that she had inserted the glass in her vagina in order to experience the erotic satisfaction of its removal by me. There was little or no modesty, which in Mabel's case was a well marked feature.

PATHOLOGY AND TREATMENT.

I regard this splitting of personality as an exaggeration of the ambivalent tendencies found in the more usual neuroses. As I pointed out in a previous paper,[1] there is a personification of the unconscious in these true cases of dual personality. In the ordinary fugue there is no independent consciousness at all. This patient dramatised her unconscious state. This appears to me to be the important distinction between true cases of second personality and the more common fugues or other forms of dissociation. In these rare cases there is a distinct state of consciousness completely cut off from the normal waking state of the mind.

The question of treatment is difficult. I have found that it is possible to fuse the personalities up to a certain point. As far as I know, there is no case on record which has been treated by psychoanalysis, but I am convinced that this is the only method holding out any hope of a complete cure. Should the personalities appear to be fused, as they certainly seemed to be in this case, there is always the underlying neurosis to be accounted for. In this

(*Continued at foot of next page.*)

[1] THE LANCET, 1923, i., 1155.

CLINICAL AND LABORATORY NOTES

TREATMENT OF SPRAINED ANKLES.

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THERE are so many ways in which a sprained ankle may become chronic and lead to disablement that it is worth while considering them and noting how they may be avoided. Classification of sprains is difficult, but is best made under two headings, according to the direction of the displacement of the foot—i.e., (1) the adduction sprain, the common type in which the external lateral ligament and peronei principally suffer; (2) the abduction sprain, in which the internal lateral ligament and spring ligament bear the brunt of the strain.

In treatment, it is essential to estimate (1) the severity of the sprain, from physical signs and symptoms, and (2) the amount of exercise carried out after the sprain took place, from the history. This last factor is important, since damaged structures have been used and will have been stretched, and will therefore take longer to recover.

The following rules appear to me to be common to the treatment of all sprains:—

1. Radiograph all sprains except mild ones.

2. Rest the damaged structures. If fracture of either malleolus has occurred the limb must be kept at rest for a longer period. If there is no bony lesion, endeavour to diagnose which ligaments and muscles are damaged and strap or bandage the foot in such a position that these are at rest and therefore have the best chance to mend; for example, in adduction sprains, strap the foot so as to prevent strain on the external lateral ligaments and peronei.

3. Strap or bandage so that the foot is dorsiflexed to a right angle—a most important point, on account of the risk of shortening of the tendo Achillis from faulty position, and adhesions, from the products of effusion gravitating posteriorly, while the patient is in the recumbent position.

4. In bad sprains give some form of analgesic and hypnotic for at least the first night; the pain may be so bad that even morphia is required.

5. During the act of spraining an ankle, excessive movement undoubtedly takes place at the sub-astragaloid and mid-tarsal joints, as shown by effusion and injury to ligaments; therefore, when passive movements are started, remember to put these joints, as well as the ankle-joint, through their full range of movements.

6. After a sprained ankle, there is a tendency for the foot to become flat and painful, especially if strapped in an everted position. In order to prevent this, encourage the patient to do feet exercises to strengthen the muscles; an inside wedge or valgus support may be necessary while carrying these out.

SCHEME OF TREATMENT.

I suggest that the following methods are efficient and, if carried out rigidly, will prevent chronic sprains. Warn the patient that it may be three to six weeks before the ankle is normal.

Moderate Degree.—(1) Ankle firmly strapped, walking allowed if not painful. (2) Massage and radiant heat applied over the strapping, and active movements, without producing pain, allowed from the beginning and continued until there is no pain or limitation of movement. (3) Strapping is removed on the fourth day, and if the ankle seems sufficiently recovered—as shown by absence of pain on passive movement to its full extent—it is thereafter supported by an elastic anklet or crêpe bandage until it feels to the patient completely recovered. (4) Do not forget to advise feet exercises to prevent recurrence, and also to guard against a painful flat-foot.

Severe Degrees.—(1) Confine to bed for a week if possible. (2) Firm pressure with bandages over lint soaked in some evaporating lotion—e.g., liquor hamamelis 1 in 6, or lotio plumbi cum opio. Do not strap bad sprains at first, but apply some form of evaporating lotion with firm bandaging. Swelling and œdema invariably occur and the patient suffers agony. On the other hand, firm bandaging over lint soaked in an evaporating lotion maintains the foot in correct position, rests the injured structures, and keeps the swelling from becoming excessive. (3) Next day the ankle is massaged gently, heat is applied, and active movements, without producing pain, are encouraged. Continue this treatment at least once each day, as it will help the absorption of effusion and hæmorrhage; a further range of movements should be obtained on each occasion. If available, diathermy through the ankle and surging faradism to the muscle will help to absorb deep-seated effusion quicker than any other form of treatment. These can be applied from the first and their value can be estimated by the rapid return of the ankle to normal. (4) At the end of the week allow the patient up with the foot supported either by strapping, a firm bandage, or an elastic anklet. Massage and physiotherapy are continued until full range of active movements is obtained without pain. The patient should carry out exercises.

Severe Degree with Fracture.—The same treatment as for the last group is applied, except that the patient is confined to bed for ten days; movements are not started until the seventh day; and the patient, when allowed up, must have his foot firmly strapped for at least three weeks.

I now suggest an alternative method for the last two degrees of sprain, which is applicable to patients unable to rest for longer than two or three days. The foot is firmly strapped so that damaged structures are well supported and the range of movement limited to a minimum. The patient is advised not to place the foot on the ground, but to walk with a crutch or the support of a stout walking stick. If possible, each day the ankle is given massage and physiotherapy treatment, as indicated before, over the strapping, but if this is out of the question the foot is left strapped for three weeks, after which time the

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case it was simply a shifting of anxiety and guilt from one level to another. The alternation of personality appears to coincide with certain emotional phases, and the revival of these phases by means of hypnosis created the change. This does not mean sublimation.

I saw this patient in consultation with another psycho-analyst, but we were unable to persuade her to start analysis at that time. Subsequent police-court proceedings, in which I appeared as a witness for her defence, make it evident that although I was successful in fusing the personalities I had not cured the underlying neurosis.

strapping is removed and massage and physiotherapy treatment are started. If the foot is left strapped for three weeks, strong adhesions may have formed, which would necessitate a manipulation of the foot under an anæsthetic before massage and physiotherapy is commenced.

CHRONIC SPRAINED ANKLES.

Under this heading are considered :—

(*a*) Those cases that have had a certain amount of treatment but experience pain, localised to a particular part of the ankle, and limitation of movement. These symptoms are due to one or all of the following : (1) Damaged structures being maintained in a wrong position and therefore stretched. (2) Teno-synovitis of one or several of the tendon sheaths. (3) Unabsorbed effusion in the subastragaloid and mid-tarsal joints. (4) Adhesions, especially posteriorly around the tendo Achillis, and around either malleolus.

If this class of sprain is seen within the first month, massage, movements, and physiotherapy is undoubtedly the best treatment, with the ankle supported in the correct position. If seen after the first month, the quickest method to obtain a supple, painless foot is to manipulate it through its full range of movements under an anæsthetic, in order to break down adhesions, following up with massage and physiotherapy treatment. Exceptions to this last method are those cases where a damaged ligament or muscle is stretched, as proved by tenderness over it, without limitation of movement ; in which case the structure is put in a position of rest, by strapping the foot, and measures are taken to strengthen the muscles.

(*b*) Those cases in which a slight sprain occurred one to three weeks previously, and suddenly, usually after exercise, there is pain under the scaphoid, due to stretching of the ligaments and a tendency for the foot to become flat. Manipulation, followed by massage and movements, will break down adhesions and help to restore the tone of the muscles. The patient should be encouraged to do exercises and a valgus support may be necessary for a short time.

(*c*) Those cases in which the ankle is continually twisting. The object here is to strengthen the muscles, especially the peronei, and it is best accomplished by applying surging faradism to the muscles and carrying out appropriate exercises, such as contracting the muscles against an obstruction —e.g., attempting to evert the foot against a wall.

(*d*) Those cases which occur in older people, and who develop traumatic osteoarthritis. Treatment for these comes under the following headings : (1) Heat, massage, diathermy. (2) Valgus support, either raising the inner side of the shoe or an aluminium support. Undoubtedly some of these methods are open to criticism, but if they were carried out, sprained ankles would not develop the painful complications—such as teno-synovitis, a painful rigid foot from adhesions, or osteoarthritis—which help bone-setters and osteopaths to thrive.

SUMMARY.

(1) There are two main types of sprained ankle. (2) X ray all sprains except mild ones. (3) Rest in bed or on a couch for a period all sprains except the mildest. (4) While resting, encourage active and passive movements without producing pain. (5) Give an analgesic and hypnotic for the first night, at least in bad sprains. (6) When putting the ankle through movements remember subastragaloid and mid-tarsal joints as well. (7) If pain and limitation of movement persist after one month, manipulate. (8) Support the ankle in convalescence.

TREATMENT BY OCTOZONE.

BY OSCAR PARKES, O.B.E., M.B. BIRM.,

AND

C. H. BUCKLEY, M.R.C.S. ENG.

OXIDATION is the most vital process in the body metabolism, and disinfection depends largely upon it. For this reason the discovery by E. Royer, of Lyons, of a method of producing a new form of ozone which has safe and rapid powers of oxidation deserves consideration.

The gas, which Royer has called octozone, is produced simply and quickly by passing oxygen at a pressure of about 5 lb. through an apparatus called the electroniser, in which it is subjected to the action of a silent electrical discharge. Octozone may be described as a very concentrated and exceedingly potent form of ozone.

Considerable difficulty has been experienced in efforts to determine the exact formula of the gas, and various chemists have labelled it as O_3, as O_4, and as O_8. It is probably a mixture of various combinations of oxygen, and so far it has not been possible to come to any definite decision as to its true composition. A spectroscopic photograph taken in the laboratory at University College of gas carried there in a doped fabric envelope, only showed the bands in the ultra-violet which are characteristic of ozone, and Mr. S. Barrett, who conducted the tests, was of the opinion that the specimen could best be described as a form of concentrated ozone produced by a method new to his department, and having properties not previously observed in ozone produced by passing oxygen through a silent electrical discharge.

Naturally, the gas is unstable and rapidly changes when exposed to the air, its characteristic pungency giving way to the sweeter smell of nitrous oxide. It is soluble in water, giving a practically tasteless solution. Stored in glass containers (blacked, or away from light) or aluminium bottles, it retains its properties for some days.

Its oxidising powers tested against various rubber compounds are very rapid, red surgical rubber being perished in under 30 seconds. It quickly deodorises fats and soaps, and its bleaching and other properties are what would be expected from a gas of its nature.

THERAPEUTIC PROPERTIES.

Its use in treatment depends upon its rapid absorption by the body tissues. Although it is far too pungent to be inhaled, it is harmless when applied properly, either externally or internally, and several methods are employed for treatment purposes.

(1) *General external application* ("*bath*"). The patient is enclosed up to the neck in a fabric suit which is filled with the gas, and absorption takes place through the skin. Exposure is from half to one hour, and the gas is exhausted from the envelope before the suit is removed. As the suit has often to be replenished during treatment, the amount absorbed must be considerable, for even a slight leakage is quickly apparent and must be stopped. There is no chill or unpleasant sensation, and the patient is usually sweating when the hour is up. Even during the first bath increased mobility of the joints may be experienced in rheumatic cases.

(2) *Local external application* in arm or leg bags, for varicose ulcers, skin conditions, wounds, &c.

(3) *Intramuscular injections*, which may be rendered painless by local anæsthesia if necessary. The gas is so quickly absorbed that practically no bleb is formed.

(4) *Injection* into, or spraying around, a local abscess.

(5) *Rectal injections*, when up to 700 c.cm. can be given at one sitting without discomfort.
(6) Drinking it dissolved in water, when it acts as a gentle laxative.

Octozone has the properties of a disinfectant without the drawback of a base which may be injurious. Its action when applied in the "bath" is to complete the oxidation of waste products (lacto-phosphate of lime, &c.) deposited in the subcutaneous tissues, muscles, and fasciæ, and to set free lactic acid. The reaction of the sweat after a "bath" is strongly acid. In some patients the capacity of the skin to effect elimination of waste products is limited—or the amount of acid set free is beyond its capacity—and the period of the "bath" must be curtailed in order to avoid the appearance of a rash somewhat similar to gouty eczema. Rectal injections may be substituted.

Local baths, spraying, and injections of the gas have a rapid action on wounds and ulcers, and the deep injections down over the hip-joint and on to the sciatic nerve have given excellent results in cases of arthritis and sciatica.

ILLUSTRATIVE CASES.

The following cases are typical:—

Varicose ulcers.—Mrs. A., aged 53, charwoman. Two varicose ulcers left leg. Size two-shilling piece. Duration, two to three years. Had hospital treatment nearly all the time, without improvement. Pain getting worse. March 25th, 1931: Ulcers sprayed for two minutes and 20 c.cm. gas injected under edge of each ulcer. Dirty wash-leather looking slough. March 26th: Ulcers dry. No discharge, treatment repeated. March 28th to 30th: Treatment repeated. March 31st: Injected 10 c.cm. only since ulcers were the size of split pea and healthy. No pain experienced since first treatment. April 8th: Ulcers healed and patient discharged. Gauze and bandage only.

Neuritis.—Mr. B., aged 58, neuritis left arm and shoulder for two years. Patient had free use of the limb but complained of aching and shooting pains. March 20th, 1931: Bath for three-quarters of an hour followed by 50 c.cm. of gas in left shoulder muscles. March 26th: Patient said that "all pain had gone and relief was wonderful." April 4th: Bath for half an hour. No pain. April 23rd: Called to report no return of pain.

Sciatica.—Mr. C., aged 70, chief steward, at sea. Duration some months and has been away from duties. Walks with difficulty. May 27th: Bath, 1 hour; 100 c.cm. gas injected into region of sciatic notch. Result: Much pain for ten minutes, then complete relief from pain. Walked from room quite well. May 28th: Repeated bath for one hour; 250 c.cm. rectal injection. Improvement continues. Slept well. No pain on walking or sitting. May 29th: Repeated bath and bowel injection. No pain; discharged cured. June 12th: Patient reported no return of pain. Had returned to duty on May 30th.

Arthritis.—Mrs. D., aged 49, arthritis shoulders, hands, wrists, and slightly in ankles. Duration 16 years. Unable to raise hands above level of shoulders, nor fully close fingers. No grip. March 20th, 1931: Bath, half an hour. March 24th: Bath, three-quarters of an hour; patient states that shoulders and hands are easier and looser, and grip returned. She had been able to use the washing wringer for the first time in three years. March 25th and 31st: Bath, half an hour; 250 c.cm. rectal injection. April 8th: Bath, three-quarters of an hour; 250 c.cm. and 50 c.cm. in right shoulder. She stated that she had used the wringer daily and that pains had left her.

Carbuncle.—Mrs. E., carbuncle at back of neck. One small opening, and pointing in other places. Cannot flex or even move neck. April 17th: Injected 30 c.cm. gas. April 18th: Painless. Can move neck in all directions, discharge free with less inflammation; injected 50 c.cm. April 19th: No discharge. Carbuncle fully cured.

We saw results at the Lyons clinic which enlarged our conception of the possible applications of the gas—for instance, feet suffering from diabetic gangrene, with perforating ulcers, which, after about 20 treatments, had become normal in colour and bade fair to regain normal outline. It is to be hoped that Royer's results with cystitis, vaginitis, and post-operative conditions will be confirmed.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING IN EASTBOURNE

SECTION OF OTO-RHINO-LARYNGOLOGY.

Vertigo.

AT the second session, Mr. F. W. WATKYN-THOMAS read a paper on vertigo in suppurative conditions of the middle ear. The only barrier to infection between the perilymphatic spaces of the internal ear and the endolymph was, he said, the flimsy wall of the membranous labyrinth. The perilymphatic spaces communicate directly with the cerebro-spinal space via the sheath of the eighth nerve and the aqueduct of the cochlea; infection of these spaces therefore seriously endangers the life of the patient. It is separated from the middle ear by the bony capsule of the labyrinth and the lining endosteum, but at the fenestræ the endosteum alone is present, though reinforced by the foot-piece of the stapes in the fenestra ovalis. If this barrier is passed by infection there will be a short period of irritation followed by one of destruction. Vertigo in aural suppuration he divided into three classes: where the labyrinth wall (1) is intact, (2) has yielded to infection, (3) where the infection has reached the posterior fossa. Vertigo might be due to changes of pressure caused by ankylosis of the ossicles, or to changes of pressure in the middle ear, or to abnormal sensibility due to exposure of the inner wall of the middle ear, when exposure to cold could set a vertiginous storm in action. Infective processes having reached the labyrinth there might be (*a*) a circumscribed labyrinthitis limited to a small portion of the canal system, (*b*) a serous labyrinthitis due to a toxic but not a bacterial invasion, or (*c*) a suppurative labyrinthitis. The last condition was due to microbic invasion either by one of the windows or by an erosion through the bone. In acute suppuration of the middle ear invasion was likely to occur through the windows, more often the oval. In chronic suppuration invasion more commonly occurred through the wall of the external canal or through the promontory. Thus in acute conditions acute labyrinthitis was more common and was likely to be followed by meningitis. In chronic conditions the labyrinthitis was more likely to be chronic in type and limited in extent, with a less grave risk of meningitis. In the early stages of affection of the labyrinth the signs and symptoms were due to the excitability of the affected labyrinth. In the later stages the labyrinth ceased to react, and signs were due to the uncompensated activity of the healthy labyrinth. The slow component of the nystagmus, the error in pointing and the falling were away from the more active labyrinth. The fistula sign when present proved the activity of the labyrinth, but really disproved the existence of a fistula, or the labyrinth would be dead; it was of no value in showing the site of the lesion. In diffuse suppurative labyrinthitis destruction was quickly reached, with signs from the healthy labyrinth. Compensation was achieved, with loss of falling, past pointing, and nystagmus, after a variable period, which is shorter if the labyrinth is opened and drained.

DISCUSSION.

Mr. E. D. D. DAVIS said that vomiting was only an expression of the degree of intensity of vertigo. Ménière's syndrome was due to some affection of the internal ear or of the auditory nerve, not to small

hæmorrhages into the labyrinth. He was doubtful as to the part played by Eustachian obstruction in production of vertigo. It was only rarely that operation on the labyrinth was necessary, more often rest, avoidance of further irritation, and administration of bromides were sufficient. He wished for simpler tests that could be applied to a patient seriously ill in bed.

Sir JAMES DUNDAS-GRANT said that cases diagnosed as Ménière's syndrome were often suffering from syncopal attacks due to arterio-sclerosis. In vertigo the possibility of a ponto-cerebellar angle tumour must be borne in mind. The effect of suction was much greater on a bare fenestra than on a fistula into the horizontal canal.

Mr. E. MUSGRAVE WOODMAN related successful results in six out of seven cases he submitted to Portmann's operation. The operation was not severe, and the patient able to go out at the end of a week.

Dr. DAN MACKENZIE said that giddiness was an extremely common symptom, and often diagnosed as biliousness. A dead labyrinth was completely deaf, but sounds might be conducted by a bone to the opposite ear.

Mr. HERBERT TILLEY related cases of vertigo entirely due to Eustachian obstruction; and Mr. W. M. MOLLISON considered this cause of vertigo a very important one. He described cases of hyper-excitability.

Subacute Otitis Media.

Mr. A. LOWNDES YATES said that subacute differed from acute otitis in that the Eustachian tube was partially open, and the products of inflammation could drain from the ear through it. In children it was characterised by evanescent pain and a temporary bulging of the tympanic membrane. Loss of hearing was similar to that in acute otitis after perforation or myringotomy. In the more severe cases of subacute otitis the membrane should be incised, and in certain cases it might be necessary to perform some operation on the mastoid process to promote drainage. Subacute otitis was of great importance in the production of deafness, and it was more difficult to diagnosé, as the symptoms were not well marked or definite. In adult life subacute otitis was characterised by deafness which varied from day to day, and by recurring attacks of pain. There might be difficulty in distinguishing conversation, although sounds were heard distinctly. This was known as confluent deafness, and was said to be uncompensated. Compensation occurred when sounds were not heard distinctly but conversation was intelligible. In early stages the drum head might be less translucent than usual, and the cone of light displaced or distorted. The membrane looked less concave, but this could be altered by applying pressure or suction with a Seigel's speculum, and sometimes it might be possible to demonstrate the movement of fluid in the middle ear. In mucopus aspirated from the Eustachian tube or middle ear and examined on the warm stage, leucocytes would be seen, and organisms most of which were intracellular. If the organisms disappeared in an hour and a half recovery was certain, if in three hours it was probable, but if they remained in the fluid after this period, and the leucocytes disappeared, the prognosis for hearing was comparatively bad. There was also, in adults, an atrophic form of subacute otitis in which pus was not formed owing to the non-production of leucocytes. In the early stages a little fluid might be formed, but eventually the ear became dry with a transparent membrane, and the inner wall of the tympanum, denuded of its epithelium, showed red through the drumhead. Deafness tended to follow and to be progressive, but treatment of the Eustachian tube in the early stages might prevent its onset.

Acute Otitis Media.

Mr. H. V. FORSTER mentioned, among the causes of acute inflammations of the middle ear, the common cold, influenza, and the exanthemata, measles being the most common agent, followed hard by scarlet fever, in which otitis tended to occur at an earlier stage. In children there was a latent type of otitis with marked general but few local symptoms; the tympanic membrane was more difficult to see than in the adult on account of the angle at which it is placed. Apparently there was an hereditary factor, otitis being common in members of certain families. In cleft palate the middle ear almost always showed signs of disease. Atrophic rhinitis was a very common cause of middle-ear disease, whilst the oft-blamed adenoid vegetations were not invariably the cause, as otitis might occur years after their perfect removal. The early signs of acute otitis were injection of the membrane and swelling, which might obscure the handle of the malleus. The tympanic membrane should be incised if the patient had lost one night's sleep and seemed likely to lose another. After-treatment consisted in frequent removal of the secretions, either by mopping or irrigation, and in keeping the incision open. The pain of otitis media was to be distinguished from that due to tuberculous laryngitis, malignant disease of the larynx, tongue, pharynx, or pyriform fossa, conditions of the tonsil, and lesions of the molar teeth. Mumps, dental abscesses, and furunculosis had to be considered, and external otitis might present difficulties. Cerumen and foreign bodies might overlie an acute otitis media, and herpes zoster and primary otic erysipelas might simulate it.

SECTION OF HYDROLOGY AND CLIMATOLOGY.

THE second session of this section, at which Dr. PERCY LEWIS, Vice-President, took the chair, began with a discussion on the

Control and Treatment of Arthritis.

Dr. C. W. BUCKLEY held that the rheumatic and tuberculous diseases were analogous and required the same kind of handling. Causal errors of living and environment, unless removed, led to an incurable condition. Causal factors in arthritis included abnormal susceptibility to climatic influences, damp cold in houses or district, deficiency of sunlight, depressing occupation, and errors in clothing and diet. The resistance of the body to such influences must be increased, especially by re-education of the protective functions of the skin, by means of light and loose clothing, bathing, and friction. Exposure to light favoured the production of vitamin D, an important factor in resistance to rheumatic diseases, but excess of sunshine was ill-tolerated; the scantily clothed girls of to-day suffered less from rheumatic diseases than did the earlier generation. Heat, while often useful as a local remedy, was often harmful when applied generally. A meat diet was beneficial; fruit essential; even acid fruits harmless. Carbohydrates should be restricted in view of lowered sugar tolerance, but not so far reduced as to cause loss of weight. Soft white bread and cooked farinaceous foods tended to bad teeth, vitamin deficiency, and constipation, all factors in the ætiology of arthritis.

Disordered capillary circulation was a noteworthy feature in the pathology of arthritis, and diminished blood-supply to the joints must be combated by exercise, hydrological measures, and massage. Dr. Buckley held that only in climacteric arthritis was an endocrine factor established, and that suprarenal deficiency was important. Attention to possible foci of infection was essential, but much harm might be done by vaccines, as in the early use of tuberculin. The first doses should be minimal, and morning and evening temperature recorded, as well as every variation in symptoms. Further research was urgently needed and this country was falling behind, not for want of willing workers, but because their efforts needed encouragement and coördination.

On the motion of Dr. BUCKLEY the following resolution was carried :—

"That this section recognises the urgent need for encouragement and coördination of research into the causes and treatment of arthritis, on the lines adopted in many continental countries, and urges the Council to undertake this by the appointment of a special committee or in some other suitable manner."

Dr. W. S. C. COPEMAN regarded diet idiosyncrasies as quite as important as drug idiosyncrasies. In spite of the loose and scanty clothing adopted by women in recent years, rheumatism was still very common in young adults. He described the night sanatoriums recently opened in Russia, where individual workers who are still fit for work sleep and get suitable meals and treatment in the early stages of disease.

Dr. FORTESCUE FOX agreed with continental writers that "hardening" was often injurious to rheumatic subjects, and should be practised with much caution for persons affected with chilliness and poor circulation. In any case it was necessary to increase the circulation by heat before the application of cold, as in the "peoples' baths" of northern countries. The observations lately published on the rapid clearing up of (acute) rheumatic illness in children simply by a change of several months from New York to Porto Rico were a convincing demonstration of the determining influence of climate upon those forms of disease.

Dr. J. L. DELICATI suggested that rheumatoid arthritis was due to some failure of coördination between the two parts of the sympathetic nervous system.

Dr. K. R. C. HALLOWES had found that the rheumatic response to climate varied considerably. After hot baths most patients did better with a cold spray and light covering than with the usual half-hour's sweating.

Mr. HARMAN TAYLOR considered that the application of Hilton's law of rest and pain had been carried too far. He had obtained good results since adopting early exercise in the treatment of arthritis.

Hyperpiesia.

Dr. W. EDGECOMBE and Dr. CURTIS BAIN communicated a paper on hyperpiesia, dealing mainly with its treatment by physical methods. Reports on the effects of physical treatment on systolic readings alone were worthless. A sustained pressure of 150/90 signified potential hyperpiesis. The blood pressure varied, and was apt to rise quickly at times; cardiac and arterial changes followed, the latter best observed in the retina. Death occurred from hæmorrhage or failure of the heart or renal elimination. Dr. Edgecombe and Dr. Bain suggested that hyperpiesia is a deficiency disease. The potential hyperpietic required active preventive treatment. Measures which dilate the vessels and widen the collective stream delayed the progress of the disease. Peripheral vasodilatation and fall of blood pressure, more enduring than that produced by drugs, could be effected by physical treatment, such as baths at or above body heat, still or effervescent, the massage-douches, and massage; diathermy being of considerable value. The result continued for a time after each bath, and was cumulative over a series. Charts were shown of "true essential hyperpiesis," under observation for periods of years, and in which timely treatment of this kind appeared to cure or arrest the condition; also others in which an annual course of baths and waters afforded temporary relief in advanced cases. These latter required careful watching, lest pressures should fall too rapidly.

Dr. FOX agreed that waves of high pressure were associated with certain periods of life, such as the climacteric in both sexes and later at 62 or 63, when cerebral hæmorrhage was especially common. He had found venesection followed by saline waters and baths of great preventive value in such cases.

Therapeutic Pools.

Dr. R. G. GORDON recalled the fact that thermal pools were used for tired Roman legionaries or as a mode of sensuous relaxation, as at Baiæ. The pool in use at the Royal Bath Hospital was at least 100 years old. Pools having chemical or physical properties were used with good effect during the late war, especially in cases of paralysis, and had led Dr. Gordon to construct a therapeutic pool at Bath. The size and capacity (20 by 20 feet, 10,300 gallons, temperature 104°) enabled exercises, with or without an attendant, to be carried out, and helpless patients could be lowered into the water. With Dr. Gibson he had induced a body temperature of 106° in a patient immersed in water at 108° for 50 minutes. The temperature of a healthy person in the pool for 30 minutes rose to 103°, as shown by a self-recording thermometer, with diaphoresis and corresponding loss of weight. Visceral activity and metabolism increased. The dilatation of the surface capillaries probably increased the nutrition of distant parts, since it was now believed that only 10–15 per cent. of the capillary bed is usually patent. Increased elimination of toxins and a definite leucocytosis had been demonstrated. Muscular relaxation, relief of pain, and reduction of the load of gravity by 95 per cent. were other effects of the pool. Dr. Gordon had treated nerve injuries after the war and old-standing poliomyelitis in children, with relief of pain, increase of circulation and of movement under a minimal load. These were optimum conditions for re-education. Some cases of congenital diplegia and athetosis have improved, also specific spinal myelitis and disseminated sclerosis when combined with other measures. Some improvement in balance and control had been noted in Parkinson's disease and after encephalitis and in tabes dorsalis. The pool might be used for joint diseases, especially chronic hip cases, and was very helpful for re-education after splints as in the congenital hip dislocations of children.

Dr. FOX regarded the large pool bath of flowing water at a determined temperature, sometimes aerated, as the most generally useful of all baths. It could be stimulant or sedative according to its temperature in relation to the body and the degree of movement in the water. Its wide range of physiological effects had therapeutic applications to many forms of injury and chronic disease—nervous, mental, the asthenia of middle or later life, circulatory atonia

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MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTION OF THE HISTORY OF MEDICINE.

AT a meeting of this section, held on Oct. 7th, Dr. R. O. MOON delivered his presidential address on

Van Helmont: Chemist, Physician, Philosopher, and Mystic.

He described van Helmont as the founder of the iatrochemical school of medicine, and a man who had taken all the realm of knowledge for his province. Born in 1578, of a noble Brussels family, he had been characterised in youth by an inexhaustible search for knowledge. After studying stoicism and rejecting it as a form of pride, he had, in turn, considered the Church, law, and botany as careers; and botany at length had led him to medicine, despite his fear that so plebeian an occupation might stain his noble pedigree. His diligence had been amazing; he had learned the aphorisms of Hippocrates by heart. Gradually he had become dissatisfied with the "deceits" of which medicine seemed to him to be full, and a study of mystical works had decided him to abandon his profession. He had then travelled in all parts, but everywhere had found the same sluggishness and ignorance. In 1605, therefore, he had returned to Antwerp, where the plague was raging, and his sympathy with mankind had led him to take up medicine again.

He had embarked on a campaign against conventional beliefs. Of a more disciplined mind than Paracelsus, he had been strongly opposed to deductive logic, believing that real knowledge must involve intuition. True sciences, he said, could not proceed to demonstration, and could not be brought to light by logic. He had thrown much fresh light on chemistry, his discoveries including that of carbonic acid gas, which he had called "the wild gas" because of its incondensibility. His progress had been hindered by his firm belief that water was the first matter or material cause of all things. He had realised that metals continued to exist through a variety of chemical changes—a belief much in advance of his age—and had also studied quantitative chemistry. He had regarded all organic processes as based on chemical events presided over by a hierarchy of spiritual forces; death was the loss of the spiritual restraint, and disease its failure to govern aright. Over and above these forces he had thought there was a sensitive, mortal soul, coexistent with mind, received by man at the Fall. This soul he had located in the pit of the stomach, as a blow there destroyed consciousness, but he had regarded its influence as diffused throughout the body.

His views on digestion had been much in advance of his time; he had compared it with fermentation rather than with cooking. He had also rejected the current view of fevers, and pointed out that heat was a symptom and not a cause of fever. He had been strongly opposed to venesection, describing it as "a bloody Moloch." He had closely followed Paracelsus in therapeutics, using laudanum and mercury. His great object had been to pacify and appease the "spiritual force" (archæus) whose anger he held responsible for the illness. He seemed to have known nothing of Harvey's great discovery. He had failed to understand respiration, but had rejected the current view that the chief function of the air was to cool. Strangely, he had believed in the power of Paracelsus's sympathetic ointment to cure wounds; his insistence on magnetic value had brought him into conflict with the Roman Catholic Church, of which he had been a devoted son, and many of his works had been condemned by the Inquisition. Later he had been imprisoned in his own house. He had united the passionate belief of the devoted Catholic with the free outlook of the inquirer, and his life had illustrated the conflict between belief and science. He had had frequent visions throughout his life, and had attached great importance to them.

No man, Dr. Moon concluded, was more likely than the physician to come across phenomena which no logical system could cover; he was very liable therefore to be attracted by fanciful explanations to meet his difficulty.

Vitalism.

Prof. A. WOLF opened a discussion on vitalism, with special reference to van Helmont, whose "archæus" had been, he said, a very anthropomorphic conception, which had descended down several lines. The doctrine of "form" had arisen with the Pythagorean school. Side by side with it was the old Greek conception of "psyche," divided into three kinds: the vegetative, the sensitive, and the rational. Over and above this tradition another line had helped to develop the idea of archæus: cabalistic mysticism. The doctrine of form—not to be limited to the idea of shape, and often nothing to do with it—stressed the importance of the actual arrangement of substances in the whole. Pythagoras had first observed it in the study of sound; the platonic "idea" was the same thing. Aristotle had maintained that to know anything—living or inanimate—adequately it was essential to know what stuff it was made of and its form. The term "form" had been consistently and quite mistakenly associated in mediaeval times with some kind of soul or spirit, and endless trouble had resulted. The term "archæus"—simply meaning "ancient"—had been used by mystics from neoplatonic times onwards in reference to God, as in Daniel VII., 9, "the Ancient of days." Van Helmont had compared light with life, and had then remarked: "In reality life in general is God." He had really regarded the archæi as fragments of God.

Modern vitalistic tendencies, continued Prof. Wolf, had a negative and a positive side, but people were only really agreed about the former; that it was impossible to understand or explain the great majority of living phenomena on strictly mechanical principles. The question was: what "something else" was to be added. One school of vitalism—substantial vitalism—represented the "substantial

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and hypertonia, chronic dermatoses, and many gynæcological and so-called rheumatic conditions. Some persons were unaccountably far more sensitive to external heat than others, and the temperature must be adjusted with care. He had recently visited certain pools in Trans-Jordania, much frequented by the Arabs since ancient times. Many of them when unwell spent half a day in one or other of the hot pools. Cardiovascular debility from the incautious use of heat was too common, but could be easily avoided.

forms" of the Middle Ages and the "archæus" of van Helmont, and credited these subtle forms with anything that could not be explained otherwise. This did not explain anything. The more scientific school simply recognised that something else must be invoked; that many activities resulting from certain collocations of facts and phenomena could not be anticipated from existing knowledge of the elements and the laws governing them. This merely described what happened under these complex conditions, and was a sound procedure. It recognised that new functions and activities might emerge under complex conditions. The divorce of science from philosophy and theology, said Prof. Wolf, was an excellent thing. Science was a kind of game with certain rules, and only certain things could be studied and understood by the rules of that game; nothing but mischief could result from trying to fuse science, philosophy, and theology.

Dr. O. L. BRADY, speaking as a chemist, felt that the whole idea of vitalism in science was a confession of failure, and likely to do more harm than good. It cropped up periodically as a kind of retreat from a difficult position. At one time it had declared that organic compounds could never be made from inorganic, but now many important compounds could be synthesised. To accept the idea that there was something outside a purely mechanistic system was to risk shirking responsibilities. There might be another force than those known, but that force would be just as universal as any other, and by no means peculiar to living beings. Van Helmont, as discoverer of the first synthetic organic compound—carbon dioxide—was a peculiarly interesting study. He had been almost the first of the scientific chemists. It was remarkable how the misunderstood Aristotelian doctrines had lasted, even beyond the time of Boyle. Everyone sought a catchword to explain what they could not understand, and in this lay the appeal of vitalism.

Prof. FRASER HARRIS said that modern vitalism was narrowed down to ideas on the nature of consciousness. The phrase: "Consciousness as cause of new activity and necessary for a new result" formed a keyword. In the sensori-motor reflexes consciousness was present but epiphenomenal; in the higher group it was causal—e.g., blushing, weeping, and the dry mouth of fear. There was an increasing involvement of consciousness in the higher reflexes. The way in which emotions were distributed over the body suggested that the psychic states were real causes. "Meaning" was a purely psychic state with no cerebral locus, but was a potent cause. The realm of the subconscious was also causal; this was the philosophical interest in Freudism. A new term was needed for the man as a whole, the mind-body symbiosis.

DISCUSSION.

Dr. D. MCKIE emphasised van Helmont's great position in the growth of physics and chemistry. The word "gas" had been coined by him for wild bodies that could not be kept in vessels and could not be condensed into visible bodies, and he had regarded gases as different from ordinary air. If his terms and definitions had been adopted earlier there would have been less confusion in the time of Black.

Dr. PARKES WEBER asked when and where "compensatory vital reactions" had first been discovered, and whether the term was liable to be misunderstood as implying some doctrine of vitalism.

Dr. A. CAWADIAS thought there was a great confusion over the word "vitalism." Modern vitalism was not a philosophical conception, but a biological law—the noumenon lying behind the fiction of phenomena. The physician was forced to admit that in every living being there was a purpose, and this admission was founded on observation. The will to live was a law; and physical and chemical laws could never explain the direction of functions. The hesitations experienced in approaching this vitalistic principle were due to misunderstanding. Vitalism had often been confused with substantial vitalism. The archæus was not a Greek word; it had been coined. It had, however, something to do with Greek philosophy, which had compared the soul with the sculptor who modelled the clay.

Prof. MILLAIS CULPIN said that because vitalism had been feared and treated as a heresy, medicine had been driven into an untenable position in the face of modern psychology and psychopathology, with disastrous clinical results. Modern conception of neurosis went right back to the time of van Helmont and Haller. Owing to the fear of vitalism an enormous amount of effort had been wasted in research on "D.A.H.," simply because no one dared to say to a soldier: "What are you worrying about?"

SECTION OF THERAPEUTICS AND PHARMACOLOGY.

THE opening meeting of the session was held on Oct. 13th, when Dr. E. P. POULTON, the new President, delivered an address on

Obesity.

The subject, he said, was still somewhat wrapped in obscurity, and much work remained to be done. The ordinary method of measuring obesity, as used by life assurance offices, was to take the person's height and age, and from the standard tables determine whether he was the right weight. Dr. Poulton questioned the wisdom or value of taking age into consideration. He himself used Ainley Walker's figures, relating stem length and body-weight. Their value was that they admitted some estimate of the degree of normal variation. But the range from his figures was too wide, probably because the length of the limbs was ignored. He considered that Dreyer's method of measurement, which involved the circumference of the chest, was inapplicable. In obese people there was an enormous development of fat round the chest; and people who became too thin were very wasted round the waist line. Possibly more accurate results would be obtained in future by taking the type of individual into account, as described by Pende. Dr. Poulton made a protest against people who wrote on obesity failing to state weight and age, and in fact giving no measurements which would enable the outsider to obtain some idea whether the person was obese.

Various theories had been propounded to explain the fact that the normal body-weight remained constant. Was it true that the amount of food needed to compensate for activity was entirely gauged by the person's appetite, and if the appetite was more voracious at one time would the person steadily grow fatter? It had been argued that if a man were to take a small pat of butter extra every day of his life he would double his weight in ten years. But there were very strong arguments in favour of a luxus consumption. Graefe had shown that in the dog it rose as the fat intake and the body weight increased, and that this rise was stopped when the thyroid was removed.

There was some doubt about the part played by "specific dynamic action"—i.e., the stimulating effect of different foods on the metabolism. It was high for proteins, and not so high for carbohydrate. Was there any difference in obese subjects in these respects? With regard to protein, experiment left the matter doubtful. In some cases of obesity the specific dynamic action of carbohydrate was not depressed. In some subjects there was increased burning of carbohydrate after a meal.

Obesity could be divided into exogenous and endogenous types. In the latter the basal metabolism was low, in the former it was high. But he doubted whether this was a helpful division; he was sure a sharp line of demarcation could not be drawn in that way. There were endogenous cases in which the metabolism was high. Dr. Edwin Warner's theory was as follows: taking a normal person, one with a normal basal metabolism, if that person put on weight by means of fat, and if the metabolism remained proportional to the body surface, though he had increased in weight, it must mean that his body tissues were working harder and were producing more heat than in the ordinary case.

From a study of the basal metabolism of a number of obese subjects it was seen that luxus consumption was mostly present, and this implied that there was an increase of thyroid activity. Hyperthyroidism was not a factor in obesity, and typical myxœdema patients were not very fat. He thought there was a good deal to be said for the idea of hyperinsulinism as a cause of obesity. The frequent occurrence of obesity was, he considered, compatible with a wearing-out of an over-active functional process, just as hyperthyroidism was commonly followed by hypothyroidism. If too much carbohydrate was taken, the production of insulin might thereby be stimulated, with increase of appetite, and so a vicious circle might become established. In early cases the sugar tolerance had been found to be increased. It had been shown that insulin secretion resulted from stimulation of the vagus centre, and this might account for the obesity of so-called hypopituitarism, which was experimentally produced by injury to the hypothalamus.

It had often been found difficult to produce loss of weight in obese subjects. This might be largely due to water taking the place of fat. The administration of carbohydrate, even in small quantities, might be wrong treatment. E. Warner had found a bigger loss of weight in one of the speaker's obese patients on a protein and fat diet than on a high carbohydrate or high protein diet—an observation which seemed to accord with certain physiological experiments. Treatment was very difficult; some workers stressed the fact that a fat person could be given a low diet, one apparently below his basal requirements, and yet he did not lose much weight. Gordon and Stanley suggested treating obese patients on a protein and fat diet, giving them only sugar between meals and when they were doing exercise, so as to stop the symptoms of weakness. Dr. Poulton and a colleague took a starch and cream diet for eight days, and at the end of that period their loss of body-weight was only 0·2 kg.

In conclusion, he said that if obesity was hyperinsulinism and hyperthyroidism mixed, why did not the subjects of it suffer from hypoglycæmic fits and Graves's disease simultaneously? That they did not do so might be because the action of thyroxin and insulin together was not the sum of their separate actions.

DISCUSSION.

Dr. H. GARDINER-HILL expressed his agreement with most of what the President had said, but joined issue with him about the action of the thyroid in obesity. He was sure it was not always a factor, but it might be so. Cretins might be fat, or they might be thin. He was sure people could put on fat after their thyroid had been removed. He felt that a person could get fat independently of the basal metabolism, because in obesity the basal metabolism might be low, or normal, or increased. It was necessary to postulate some other mechanism, and an abnormal feature of obese people was that they had some unusual storage mechanism, a peculiarity which might be inherited, since a number of obese people could be found in one family. It might be acquired as a result of diminished energy expenditure, or excessive food intake, or, on the other hand, it might depend on a disturbance of the ductless glands—i.e., it might be present in thyroid deficiency, in pituitary deficiency, in ovarian deficiency. Of 31 women who had had both ovaries removed, 84 per cent. gained considerably in weight; of 14 who had had one ovary taken away, 80 per cent. gained considerably in weight. His conclusion was that one must look to a ductless gland for a cause, but he did not yet know enough to lead him to favour one in preference to the others.

Dr. EDWIN WARNER thought that Dr. Poulton had made out that fat people differed clinically, and to some extent in metabolism, from the ordinary case of hypothyroidism. He thought it meant that though these people had a large amount of fat in the subcutaneous tissue and in other parts, they were working the active tissues harder than normal in order to get rid of the increased intake of food or to store it. These people absorbed an amount of food which they did not require for ordinary purposes, and in dieting them it was essential to give them an excessive calorie intake. A strict dietary was as important for these obese people as it was for the diabetic. Loss of weight was accelerated by cutting off the salt taken.

Dr. J. H. BURN held there must be a good deal of truth in the idea that obesity would depend on the amount of thyroid activity. The action of the pituitary gland was the opposite of that of insulin.

Dr. W. W. PAYNE said it was reasonable to assume that there must be some relationship between the food carried in the blood—particularly the blood-sugar and the blood-fat—and the storage and the discharge of fat.

After further discussion the PRESIDENT replied.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

General Practitioners and Voluntary Hospitals.

AT the first sessional meeting of this society on Oct. 2nd, the new president, Dr. H. H. MILLS, opened a discussion on the relationship of general practitioners to the voluntary hospitals. After giving a brief historical sketch of mediaeval hospitals, describing in particular the great work of Santa Caterina, of Siena, he turned to the modern developments in hospital administration, in particular the advent of the paying ward. This opened up the question of the payment of the voluntary hospital staff, in favour of which he expressed a decided opinion, and also the position of the general practitioner in relation to the paying wards which received his patients.

Every doctor in every area should, he said, be linked up more or less closely to some hospital. The new status of the municipal hospital was a further factor to be considered in regard to the future of the voluntary institution.

Dr. G. C. ANDERSON (deputy medical secretary, British Medical Association) said that the hospitals were now, through their almoners, making charges of all who could pay, no matter how little. Did it not appear therefore that the conditions under which the medical staff gave their services in the past had materially altered? The patients whom practitioners had attended outside the hospital in the past, in nursing homes or in their own houses, were now going into hospital as a matter of course, with the consequence that members of voluntary hospital staffs in their private practice were "feeling the draught." Quite recently the British Medical Association had issued a questionaire to all the hospitals to discover how far opinion was in favour of some payment to the staff, and the change of opinion in favour of this arrangement which had taken place during the last ten years was very impressive. It had also to be remembered that there were now large municipal hospitals side by side with the voluntary ones. These had power to charge patients, and they had paid staffs. It was unthinkable that there should be two hospitals, both of them properly equipped and staffed, serving the same area, the one with a paid staff and the other with an unpaid. It was not only in the interests of the profession that they should be paid for their services, but in the interests of the public generally that paying or contributory patients should pay for medical services rendered. He also urged that as far as possible the general practitioner, whether insurance or private, should have some hospital facilities.

Dr. RICKARD W. LLOYD pointed out that if the staffs of voluntary hospitals were remunerated they would have to meet a tightening up of regulations which might prove irksome.

Dr. G. C. DEWES said that the teaching hospitals were always ready to do what they could for practitioners; some welcomed them at lectures. But it had to be remembered that the voluntary hospitals were very busy, their resources fully taxed, and that as a rule they had not room to expand. Possibly in future the municipal hospitals would be used for a class of patient which could pay more than those ordinarily received in the voluntary hospitals.

Dr. F. MCG. LOUGHNANE said that even when opportunities were offered for the practitioner to follow his case into hospital, it often happened that he took no further notice of his patient, never coming to the operation to which he was invited, nor making inquiries afterwards. Even post-graduate courses were mainly attended by men from overseas, not by local practitioners.

Dr. J. F. HALLS DALLY said that the ideal arrangement had been reached in New York, where a medical centre had been founded at some distance from the centre of the city, where a mass of buildings had been put up catering for every class of the population. He could not advocate the promiscuous introduction of general practitioners into the wards of a general hospital, nor could he conceive how such introduction was good for the patient, for the hospital organisation, or for the practitioner himself.

Dr. H. H. SANGUINETTI said that the position of the practitioner who wanted to follow his patient into the paying wards was somewhat embarrassing, because he could only continue to treat him by consent (so to speak) of the staff. In the nursing home it was very different, for although the consultant was called in, the treatment was left in the hands of the practitioner as far as possible.

Mr. MALCOLM DONALDSON believed that the voluntary hospital had got to go. It would become a State hospital with a paid staff. The danger of a whole-time service, however, was that it stopped initiative. With regard to private wards, he could only speak from experience of those at the Royal Northern Hospital, where a practitioner was allowed to call in any consultant, provided the consultant was on the staff of another London hospital.

Sir ALFRED OXLEY paid a tribute to the work done under municipal auspices in the direction of antenatal care and the treatment of children.

Dr. RONALD CARTER, who spoke from the point of view of the officer of a municipal clinic, said that so far as the hospital question was concerned he had experienced no difficulty. Whenever he had written a letter to a member of the staff of a hospital he had always received a courteous reply, he had been informed of any operation, and he was able to take an interest in the patients throughout their stay in hospital.

Dr. C. ELLINGWORTH described a recent visit to Russia, where he saw an ideal system of hospital administration which had been worked out. In London there was little coördination between the different hospitals in respect to the out-patient departments, but in Leningrad there was an out-patient department attended by as many as 2000 out-patients a day, and nobody was kept waiting, each patient being seen by appointment. These patients had first been seen by their section or area doctor, who, after his hours of private practice, took an active part in the clinic, where he was provided with a laboratory and means of research in the particular branch in which he was interested.

Dr. JULIUS BURNFORD said that the legislature might lay down a Utopian system of State service, such as apparently had been done in Russia, but the accomplishment of such schemes did not always correspond with the desires expressed at their initiation. A detailed system of payment for services, with many rules and regulations, might result in the authorities obtaining duty from their officers, but the patients might not get the full service they now obtained. As to participation by the general practitioner in the voluntary hospital, did he really want to participate?

Dr. ANDERSON, replying, remarked that there were industrial areas in England where 75 or 80 per cent. of the hospital income came in some form of patients' contributions, and there were indications that the class of people who were paying into the contributory schemes would be largely extended. Surely therefore the medical staff must safeguard their own interests. As to the out-patient department, there was no doubt that some change ought to take place; people ought not to be allowed to attend such departments without some sort of recommendation. Many of the cases which did come should be referred back to the insurance or private practitioner, who should undertake the treatment which in many cases he was willing to undertake.

Dr. VAUGHAN PENDRED mentioned instances in which former private patients now took advantage of municipal facilities. He complained that the private practitioner was being wiped out, on the one hand by the increased resort to hospitals, and on the other by the decreasing sickness rate.

REVIEWS AND NOTICES OF BOOKS

Modern Medical Treatment.

By E. BELLINGHAM-SMITH, M.D., F.R.C.P., and ANTHONY FEILING, M.D., F.R.C.P., Physicians, St. George's Hospital. London: Cassell and Co., Ltd. 1931. In 2 vols. Pp. 705. 30*s*. for 2 vols.

PRACTITIONERS complain with some justification that the problems of diagnosis are divorced from those of treatment. The space devoted to treatment in even the larger text-books of medicine is often woefully small. Dr. Bellingham-Smith and Dr. Feiling have written a book expressly designed to give prominence to treatment, though they have included some account of ætiology, symptoms, and prognosis. It follows that each subject is presented from the aspect of the disease concerned, and not from that of the remedies employed. The first volume includes chapters on diseases of the nervous system, heart, blood-vessels, blood, endocrine glands, respiratory and genito-urinary systems. The second volume deals with diseases of the alimentary tract, the liver and disorders of metabolism, intoxications, infectious diseases, and diseases of joints and muscles. Each volume contains a full index to the whole book, which is a convenience; no ready reference to drugs is, however, available in the index, which is classified solely under diseases and symptoms.

This work should prove a valuable addition to the practitioners' library. The authors have used their wide experience, and have not ignored well-tried remedies for the sake of new and less certain methods. The more recent additions to therapeutics, such as liver treatment in pernicious anæmia, quinidine in heart disease, malarial treatment in general paralysis are included, and even such modern methods as the use of higher carbohydrate diets in diabetes. Throughout their work the authors show good judgment; they write clearly and concisely, and achieve brevity without sacrifice of important detail. Many prescriptions are included, but full weight is given to dietetic, physical, and specific methods, as well as to pharmacological treatment. The section on digestive disorders and of diseases of the nervous system are particularly helpful, and the chapter devoted to the psychoneuroses is welcome. The text is not overloaded with references to original papers, but the authors quote the experience of others where it differs from their own. The reader always tends to expect more help from any work on treatment than he is likely to obtain from the written word, and to say that he will not be disappointed in this book is high praise.

Operative Surgery.

By Dr. MARTIN KIRSCHNER, Professor of Surgery at the University of Tübingen. Translated by I. S. RAVDIN, B.S., M.D., J. William White Professor of Research Surgery, University of Pennsylvania; Surgeon to the University Hospital, Philadelphia. London: T. B. Lippincott and Co. 1931. Pp. 666. 50*s*.

THOUGH this book deals essentially with the principles of surgery, its appeal will not be solely to the undergraduate student or operating novice. The experienced surgeon will find much of interest in it, not least anent the outlook and ideals of the author. These are eminently sound and well expressed; any qualified doctor contemplating a surgical career would only derive benefit from reading the introductory chapter. Prof. Kirschner deplores the increasing number of surgeons whose work does not conform to the highest standards, either in the skill with which it is carried out or in its conception. He gives a timely warning that though operative procedures have been made comparatively safe, we have not yet complete control of the issue of even the simplest surgical act. Speaking of the necessity for a definite indication for every operation, he says the question should not be that which can be operated upon, but that which must be operated upon. Where doubt exists the surgeon should ask himself "whether he would subject himself or a member of his family to operation for a similar condition and, if so, which procedure he would elect." Prof. Kirschner quotes von Bergmann's dictum: "The purity of surgical science is entrusted to you." No more appropriate inscription could be written over the entrance to every operating room. In this book the ideals set out are uniformly high, and the criticisms offered of certain methods are offered in the light of these ideals. The author says of spinal anæsthesia, for example, that it is probably the most uncertain and dangerous method of anæsthetisation available. The very occasional catastrophe seems to arrive independently of the best technique. No one who has read carefully the literature of this subject, and has any considerable experience in its practice, can deny the essential soundness of this verdict. The various chapters describe the general surgical technique of the operation room, methods of anæsthesia, the control of hæmorrhage and of infection, methods of operating upon skin affections, muscles, tendons, blood-vessels, nerves, bones, and joints. A special chapter is allotted to amputations. The treatment of abdominal affections, the surgery of the thorax, neck, or central nervous system are deliberately excluded, since the book is primarily concerned with fundamental methods. Yet it is as possible to frame wise general principles in connexion with abdominal surgery as in connexion with the surgery of limbs.

The numerous pictures are beautifully drawn, and many of them are coloured. The translation is good, and the style of writing easy and attractive.

Rational Treatment of Varicose Veins and Varicocele.

With notes on the application of the Obliterative Method of Treatment to other Conditions. By W. TURNER WARWICK, M.A., M.B. Cantab., F.R.C.S. Eng., Surgeon to Out-patients and Surgeon in charge of the Rectal Department, Middlesex Hospital; Surgeon to Hertford County Hospital. London: Faber and Faber, Ltd. 1931. Pp. 187. 5*s*.

WHATEVER may have been the tendency in the past to look upon varicose veins as localised and superficial lesions, and to ignore their relation to the cardiovascular and other systems, it has been avoided in this monograph, which is both thorough and well balanced. The first 93 pages deal with the anatomy and physiology of normal veins and the ætiology of varicose veins, and Mr. Turner Warwick's observations of the valvular mechanism of venous return, which he has reported in THE LANCET (1930, ii., 1278), form a suitable introduction to the rest of the book, which deals with various aspects of treatment. In considering the rival claims of operation and injection he assigns surgery a very small place in the

treatment of uncomplicated varicose veins. The risk of embolism following injection is shown to be very slight by the statement that only six such accidents have been reported. The chance of this complication is therefore much less after injection than after operation. The treatment of varicose ulcer, varicose eczema, piles, and varicocele are also dealt with. The operative procedure recommended for this last condition has been described in our columns (1931, i., 517). The book as a whole is a useful study of theory and practice.

Nutrition and Diet in Health and Disease.

Second edition, revised. By JAMES S. MCLESTER, M.D., Professor of Medicine, University of Alabama. London: W. B. Saunders Co., Ltd. 1931. Pp. 891. 36*s*.

Prof. McLester's book on Nutrition and Diet, first published in 1927, was written "from the point of view of the physician whose interests are general." Its aim was to present a practical handbook of dietetics in health, prophylaxis, and treatment, and to include sufficient discussion of the physiological, chemical, and pathological aspects of the subject to make the management of diets intelligent and as far as possible scientific. The balance is well maintained. Concise and up-to-date descriptions of such subjects as metabolism, digestion, and nutritional requirements are supplied, and a section on the pathology of each disease precedes the information on its dietetic treatment. The author naturally assumes in his readers a certain amount of physiological knowledge, but not more than is at the disposal of the average practitioner. Complicated chemical formulæ are avoided, but full references are given for the benefit of those who want further detail.

It is, however, on the practical side that the book makes its greatest appeal. Prof. McLester is not afraid to omit altogether, or dismiss in a few words, old rules which, though they have been proved to be valueless, still find a place in so many text-books. Where diet is of real importance, on the other hand, the smallest details are considered, and alternative menus are constructed for every day in the week. Some of these are not entirely suited to the English patient, who has probably never heard of "noodles" and is unable to obtain corn muffins, but the majority would require very little adjustment. Many recipes for special dishes are supplied, with due reference to the importance of variety, palatability, and cheapness, as well as nutritional value. Where the views of different authorities vary, details of more than one régime are provided. In the presence of such attention to detail it is rather surprising to find no definite instruction for the gastric (or duodenal) ulcer patient after the fourth week of his treatment. Noteworthy sections are those on obesity and on diabetes, and though the diets recommended in acute nephritis may not meet with universal approval, the discussion of dietary treatment of the more chronic forms is admirably thorough. In rheumatism, the author has a healthy scepticism of the value of dietetic "cures." In other conditions in which dietetic indications are somewhat vague (such as febrile illness, tuberculosis) the diets suggested will be found useful, though they are based more on common sense than on scientific knowledge. An excellent section on Infant Feeding is contributed by Prof. McKim Marriott; that on the feeding of surgical patients, by Prof. Barney Brooks, is too brief to be of real value. The final section of the book is devoted to instructions on cooking, special methods of feeding, and tables of metabolism, height and weight, nutritional requirements, and food values.

Altogether a sane, practical, and unbiased survey of the present state of our knowledge of diet and nutrition.

Applied Physiology.

Fourth edition. By SAMSON WRIGHT, M.D., M.R.C.P., Professor of Physiology, Middlesex Hospital Medical School. London: Humphrey Milford, Oxford University Press. 1931. Pp. 552. 18*s*.

THE teachers of the subjects in the earlier part of the medical curriculum are always being reproached for not linking them up with the later clinical studies. Physiologists have been peculiarly vulnerable in this respect, but their attitude to clinical problems is happily becoming less detached. The keen student is anxious to carry his knowledge of physiology to the bedside, and he is nowadays being helped to do so by special classes in applied physiology, and by the publication of text-books designed to this end. Prof. Wright's book serves this purpose admirably, and may be commended not only to the undergraduate, but to the physician.

The book is divided into sections dealing with the different systems of the body, and it is easy to find information on any subject, even without using the very comprehensive index provided. The author draws freely from the latest literature, and has a critical appreciation of the bearing of any new developments on clinical practice. We observe that the theory that intestinal intoxication is responsible for many ills does not receive much support from experimental investigations.

The volume contains much physiology of general as well as of practical interest.

Elementary Chemistry.

By W. LITTLER, B.A., B.Sc., Senior Science Master at Hele's School, Exeter. London: G. Bell and Sons, Ltd. 1931. Pp. 440. 4*s*. 6*d*.

THE spirit in which this book is written is, perhaps, best summarised in the following quotation from the author's preface: "Chemistry is a subject with a great and interesting history; it has an almost infinite number of relationships to the every-day life of civilised peoples; it is a subject in the study of which any boy or girl may take a legitimate pride." The text is written in conversational style, with a free use of the personal pronoun in addressing the reader, and the author has obviously enjoyed unfolding his story. His information is culled from many usually untapped sources, such as the large manufacturers from whom he has obtained permission to reproduce photographs, with the result that the so-called elementary chemistry is brought into close contact with the manufacturing problems of the moment. Even the most difficult theoretical questions are suffused with a living interest, often assisted by the use of simple or homely analogies, and the account given of the more recent views on atomic structure, condensed into some three or four pages, is a triumph of lucidity which will repay reading by advanced students. As the book is intended to cover the whole of the chemistry needed for the usual school certificate or matriculation examination, it contains a liberal supply of examination questions and answers to numerical examples. If it fails to inspire interest in chemistry it will be the reader's fault and not the author's.

THE LANCET.

LONDON: SATURDAY, OCTOBER 17, 1931.

MULTIPLE PERSONALITY.

IN his presidential address to the Section of Psychology at the recent meeting of the British Association Dr. C. S. MYERS contrasted the every-day changes of personality within the normal self—as shown in business, at play, and in the bosom of one's family—with those abnormal conditions in which personalities exist as alternating selves. Those who heard or read his paper will turn with interest to p. 846 of our present issue, where Dr. R. M. RIGGALL records a case of multiple personality resembling the classical one described by MORTON PRINCE.

The condition is an extreme example of what psychopathologists call a dissociation of consciousness, and the conception of mind as capable of spatial division, so long as we remember that it is only an "as if" hypothesis, is justified by its convenience in bringing under one description a series of phenomena that is at first sight very heterogeneous. Many complicated acts are carried on by all of us with little awareness of their performance, though our main attention, temporarily turned elsewhere, can be at need directed upon them. The nature of the acts may indicate that elaborate mental processes, involving sensation, perception, and purpose, have been taking place in an independent fashion. There has been a division of attention, and such division is well within the limits of the normal. If, however, one set of mental processes becomes more permanently excluded from that stream of consciousness associated with the self, then we have a pathological dissociation, as exemplified by some hysterical symptoms—anæsthesia, deafness, contractures, and the like—and by the phenomena of automatic writing and water-divining. In these latter examples the conception of a dissociation of consciousness, with a loss of awareness of the dissociated part, enables us to avoid the dilemma of either believing in the miraculous or stigmatising the agent as a wilful cheat. Sometimes one stream of consciousness must be pictured as completely replacing the ordinary one; then we have mediumistic trances, fugues, somnambulisms, and other forms of loss of memory or personal identity; here hypnotism has its uses in bringing the content of the dissociated stream into the field of awareness of the other, thus reintegrating the personality. Last of all come such cases as Dr. RIGGALL'S, in which each dissociated stream takes on the attributes of an individual and a complicated drama is played out by various actors, each actor, however, manifesting one set of tendencies that were originally present in the patient before the dissociation.

Dr. RIGGALL'S paper indicates the relation between the theory of dissociation, due to PIERRE JANET, and FREUD'S theory of the unconscious. The first theory is static; it gives us a pattern to which a particular group of cases conforms, but it offers nothing to the understanding of causes. FREUD'S theory is dynamic, and Dr. RIGGALL suggests that if analysis had been possible in his case the mischievous split-off personality would prove to be compounded of what are generally regarded as the deeper contents of the mind, the repressed instinctive side of the patient's self which has crystallised out in a mass and thus found expression. The potentiality of dissociation is, according to JANET, a mark of the hysterical temperament, and, though definite cases of multiple personality are rare, yet the application of the theory enables us to picture many disorders of behaviour not as mere perverseness but as problems to be approached through the study of abnormal psychology.

THE LARYNGOSCOPE.

IN choosing for the theme of his presidential address to the Medical Society of London the history of the laryngoscope, Mr. HERBERT TILLEY set himself a task parallel to that performed by Dr. R. A. YOUNG, who last year, on the analogous occasion, gave his audience an historical survey of the stethoscope. Mr. TILLEY begins the story with the work of the versatile GUY BABINGTON, who, 25 years before MANUEL GARCIA made public his discovery, had invented an instrument, a mirror on a long shank, with which a certain inspection of the larynx behind the fauces was made possible. The invention was known in the London schools, but the results of its trial seem to have impressed neither BABINGTON nor his immediate followers with any notions for improving it. They did not realise what they had done. Other English surgeons had devised methods for obtaining a view of this region with a mirror on a handle such as was being employed in dentistry—and it was the development of this idea which directly led GARCIA to invent the laryngoscope. It is unlikely that GARCIA had ever heard of BABINGTON, of Guy's Hospital, or AVERY, of Charing Cross Hospital, or of any of the procedures to which LISTON, of University College Hospital, referred in his writings; his brilliant idea was original, and he realised what he had done. GARCIA had not the same object before him as the medical experimenters, for they were seeking the remedy of pathological conditions, while he was concentrating his attention upon the structure and mechanism of normal tissues. He could not have made his auto-laryngoscopic examination if the parts had been diseased, and he had definite reasons, as a singing master, for ascertaining how those parts worked in health. When by light

reflected from a hand-mirror he observed the opening and closing of his glottis, he was giving a substantial demonstration of the advantages to be derived from experiment on the normal subject. To his medical predecessors this view never occurred, and what they were able to see in the pathological subject provoked none of them to pursue their investigations. Thus it was left to GARCIA, the layman, to have the inspiration of employing reflected light, and to become the inventor of the laryngoscope.

The development of the laryngoscope, when it became recognised as a most valuable assistant in clinical and operative work, was largely due to TÜRCK, of Vienna, and CZERMAK, of Budapest, between whom there arose the sadly familiar jealousy on the question of priority. But Mr. TILLEY attributes to CZERMAK the fundamental improvement in technique, by which the reflecting mirror, whether directing illumination from sunlight or any artificial source, could be fastened to the operator in such a way as to free a hand for intralaryngeal manipulations. The stride forward was huge. Both GARCIA'S hands were occupied in the task of seeing the parts, the little mirror mounted on its handle being held against his uvula, while the other hand was employed in manœuvring the hand-mirror so as to properly direct the reflected light. CZERMAK held the handle of the reflecting mirror between his own teeth, and thus had an unemployed hand ready for manipulations. Thereafter things moved rapidly, and in this country MORELL MACKENZIE, who studied under CZERMAK, became the pioneer. He founded the Throat Hospital in Golden-square in the year 1863, and the special work done there was of such a character that the whole position of laryngology became altered, and the methods of remedy multiplied in proportion to the increased opportunities for diagnosis. Laryngology became recognised as a definite and important surgical specialism, although conservatism among the professional leaders allowed some 30 years to go by before there was any full recognition of the position. But in 1893 FELIX SEMON and a group of disciples started the Laryngological Society, now a vigorous branch of the Royal Society of Medicine, and from this time forward the laryngologists have been among the most progressive exponents of modern surgery.

In dealing with the stethoscope Dr. YOUNG had to acknowledge that the work in laboratories and the employment of radiology had superseded the instrument in many directions where it had been of the first service to medicine, and in some where its service had been exaggerated; while he pointed out its persistent value as an aid to careful clinical investigation his address was largely a story of the ancient fame of the stethoscope. Mr. TILLEY was in the happier position of having an instrument to deal with that has been since its discovery of steadily increasing utility. The number of lives that have been saved by the laryngoscope, whether in the establishment of diagnosis or in the course of operations, is enormous, and it well deserves the detailed record that Mr. TILLEY gives it.

FOOT-AND-MOUTH DISEASE.

AFTER Loeffler and Frosch, in 1898, had established the filtrability of the virus of foot-and-mouth disease and had produced an antiserum, further advance was delayed by the necessity of inoculating one or more large farm animals every time a test was made for the presence of the virus. Waldmann and Pape, in 1920–21, initiated more rapid progress by discovering that the guinea-pig was susceptible if inoculated intradermally on the plantar pad. Since then many strains of foot-and-mouth disease virus have been used for experiments and intensive study has yielded useful information. In the latest report [1] of the Foot-and-Mouth Disease Research Committee, which brings our knowledge up to the middle of this year, evidence is produced which confirms and extends much of the earlier work and emphasises certain new points which have considerably changed the outlook on the disease in this country. In a special refrigerating chamber at the research station of the Ministry the carcasses of cattle slaughtered and dressed by ordinary trade methods have been stored under conditions exactly like those employed in commercial export from meat-producing countries. This experiment has shown that parts of the carcass, notably the bone-marrow, may remain infective for six to ten weeks under such conditions. The cattle used in these experiments were not especially highly infective when slaughtered, and there is reason to suppose from other experiments that this long duration of infectivity of the tissues was not exceptional. Wrapping-cloths soiled with blood were also found to be infective after cold storage for at least 40 days. The liability of such infective materials to set up foot-and-mouth disease in the country receiving them was shown by various experiments—e.g., by feeding crushed bones and other parts of the carcasses to swine, which thereby acquired the disease.

The claim of Beattie and Peden (1924) and Beattie, Peden, and Morcos (1928) that rats are susceptible to foot-and-mouth disease has been confirmed by finding a few infected wild rats in the neighbourhood of infected farm animals. Further, Mr. W. H. Andrews, D.Sc., and his colleagues have repeatedly succeeded in infecting wild and tame rats experimentally by inoculation, by feeding and by contact. The lesions in rats are beautifully illustrated in the report. Besides the more obvious vesicles on the tongue and feet, which are not always present, it seems to be established that small superficial ulcers and scabs on the tail must also be considered specific lesions, since active virus has sometimes been derived from them. The isolated observation of Mr. F. C. Minett, D.Sc., that hedgehogs are susceptible has been extended by Mrs. Y. M. Gibbs and Mr. J. T. Edwards, D.Sc., at the Lister Institute, and it has been shown that in this animal the disease is commonly fatal. No case of foot-and-

[1] Ministry of Agriculture and Fisheries. Fourth Progress Report of the Foot-and-Mouth Disease Research Committee. London: H.M. Stationery Office. 1931. Pp. 375. 7s. 6d.

mouth disease in a wild hedgehog has so far been demonstrated. Mr. I. A. Galloway at the National Institute for Medical Research has shown that cats are susceptible to experimental inoculation—which agrees with independent work by Höve in Germany. He has studied 90 substances of very varied chemical composition in the hope of finding one which would prevent or modify the disease, but without success. A similar series of negative experiments has recently been recorded from Waldmann's laboratory. Mr. Galloway has also shown that the virus survives in milk about as long as it survives in tap water, except that when the milk becomes sour activity is soon destroyed. Virus added to sterilised milk will remain active at 18° C. for 30 to 35 days.

With a view to making a vaccine of greater efficacy than the formalinised virus previously shown to produce immunity in guinea-pigs, other means of destroying its infectivity have been tested, but with neither phenol, heat, ultra-violet rays nor bile could an equally serviceable vaccine be obtained. Mrs. Gibbs has made further observations on the preparation of vaccine with formalin and has studied the duration and quality of the immunity produced by the vaccine in guinea-pigs. Prof. A. Ciuca shows that complement fixation can be carried out with immune serum and concentrated virus, and that the serum produced with each of the three types of virus is quite specific for its own type in this reaction, as was already recognised when such sera were used for the neutralisation of the virus in experimental infection. It is clear that a trivalent or multivalent serum is necessary for practical purposes unless the presence of only one type of virus can be assured at the time and place at which it is needed.

The physical properties of the virus have been further studied, and Prof. H. B. and Dr. M. C. Maitland record its successful cultivation in vitro in the tissues of the embryo guinea-pig, finding that not only surface tissues of the tongue, lips, and plantar pads, but also the hairy skin form a suitable pabulum. Cultivation was carried on for nine months in a single series of 17 cultures; in the final flask the virus could be diluted 10,000 times and still prove infective, the calculated total multiplication reaching the figure of 10^{39} times the original inoculum. Dr. Edwards has investigated the desiderata for culture in another way, examining the best conditions for survival of the virus with special regard to the acid-base and oxidation-reduction states of the artificial media. He has not obtained evidence of multiplication, but records results showing, inter alia, that the optimum pH for survival is not the same when other conditions are varied, and that the pH in the developing vesicles on the guinea-pig's foot is much more acid than has hitherto been regarded as essential for survival. The types of different samples of virus from British and Argentine sources have been examined by Dr. Andrews and his co-workers and they have mostly corresponded to the types previously recorded, but a few aberrant strains have been found.

It may be said that from the practical point of view much knowledge has been gained concerning the means by which the disease may be spread, and this should help to anticipate and discount danger from previously unknown sources of infection in spite of the increased facilities for distribution of the virus by the ever-growing means of transport. From the theoretical aspect it is interesting that the infective agent of foot-and-mouth disease, which is perhaps the smallest of the pathogenic viruses, nevertheless is not very unlike the infective bacteria in its power of resistance to physical and chemical substances and in its relation to the immunity reactions which it elicits.

THE SHORTAGE OF DENTISTS.

SPEAKING from the chair at the annual prize distribution of the Birmingham University Dental School, Mr. Malcolm Knott said that the country would soon be faced with a serious shortage of dentists. If the health of the country were to be properly attended to there must, he said, be a considerable addition to the number of those now entering the dental profession. To make good the loss on the Dentists' Register by death and retirement from practice an annual addition of 625 names was needed; and, as a matter of fact, we were not getting anything like that number. School clinics alone could absorb 500–700 dentists. His anxiety has been shared by the Dental Board for many years. It is a simple arithmetical point with which, as Sir F. D. Acland has said, anyone is bound to be impressed. What number of students should enter our dental schools each year in order to maintain a register of over 14,000 if, before the war, 250 new licentiates a year were needed to maintain a register of about 5000? The arithmetical answer to this rule-of-three sum, he said, is 700. And as the annual entry to the schools is not more than half this figure, two courses of action have been forced upon the Dental Board: (1) to help to rebuild and equip dental schools so as to make them more efficient and less unattractive than they (sometimes) used to be; and (2) to help promising young people, likely to make good dentists, who cannot afford the necessary training. In both directions this policy has been consistently pursued. Only this week we record the fruition of the scheme which gives Newcastle-on-Tyne a new dental hospital and school adjoining the Royal Victoria Infirmary. The scheme of assistance has steadily gone on; bursaries are tenable at any recognised dental school in the British Isles, and the Board's bursars are regarded as comparing favourably with other students in regard to personality, industry, and social standing. The Registrar of the Board has prepared a memorandum which has continuously been brought to the notice of headmasters and others in a position to influence the careers of boys and girls leaving school. In presenting the prizes at Birmingham Prof. C. S. Gibson remarked that the real need was the development of something which would make dentistry more than a mere craft. He would like to see the curriculum of dental schools altered with a view to fostering research work in dentistry; in his own department at Guy's grants had been given towards elucidating the mysteries of metallic alloys for fillings and of the materials used in the making of dentures. The future was bright with promise for the dental student since the range of openings for junior practitioners of dentistry had been greatly augmented.

ANNOTATIONS

ANOTHER YEAR OF RADIUM.

THE second annual report of the Radium Commission deals with the year ended on August 31st, 1931, which has been largely occupied in developing the National Radium Centres, five in Scotland, one in Wales, and eight in England, reckoning the Mount Vernon Hospital and the Radium Institute as one centre combined as a post-graduate school for the whole country. In addition to these it has been provisionally decided to have regional centres in the East Anglian and South Western districts. The total amount of radium ordered, or approved to be ordered, by the Trust now amounts to 24·9 g., of which 21·8 g. have been delivered and about 17 g. distributed to the centres. Owing chiefly to present financial conditions three centres (Mount Vernon, Edinburgh, and Newcastle) have been unable to take up the amount of radium originally asked for, and three other centres (Bristol, Liverpool, Newcastle) are not yet ready with their radon installations. Two courses for post-graduate students have been organised and carried through at the Mount Vernon school and a third course is now being held. On the research side the school has received the support of the Medical Research Council and of the British Empire Cancer Campaign, and the report notes with regret that the work—clinical, teaching, and research—at Mount Vernon itself is seriously hampered by lack of funds. Out of a total of 150 beds only 70 can at present be used. The Radium Institute continues to supply national radon at a flat rate of one shilling per millicurie for the use of non-paying patients, on condition that detailed records are kept of its use.

Mass irradiation has not turned out quite according to plan. In allocating the four-gramme bomb to Westminster Hospital last year it was stipulated that preference should be given to cases of malignant disease in three regions—breast, stomach, and prostate, in the two latter of which at any rate surface therapy had proved inefficacious. These conditions have been loyally observed by the hospital, but the results confirm what has also been the experience abroad, that under present conditions of knowledge this form of radium therapy cannot be recommended for treatment of cancer in these regions. Nor were any better results obtained in the few cases of deep-seated cancer of other organs in which this method was tried. The continued use of the bomb in its present form is regarded as unwarranted. Surface therapy by means of such bombs is only very partially explored, and the Commission, in conjunction with King Edward's Hospital Fund for London, is considering future policy.

The loan of radium by the Commission is most carefully safeguarded, but in a few cases it seems small quantities of radium have been lost. Far more serious has been the injury to the health of certain individuals handling the radium. Two causes may have contributed to this unfortunate result. On the one hand the keenness on his work of a radium officer may lead him to neglect some precaution designed for his own safety, and he may not become aware of the injury before it is well established. It is the view of the Commission that for the protection of the personnel the reports of the periodic blood counts made at regular intervals (at least twice a year) should be submitted to one of the physicians of the hospital concerned, appointed to have medical charge of the radium staff. On the other hand radium officers are expensive, and sometimes unforeseen, additions to the staff. They require exceptional periods of rest, which means that they must have substitutes capable of carrying on their work. Since this is not always easy to arrange financially or otherwise, the radium officers, being usually young and keen, either minimise the risk to which they are exposed or, knowing the financial difficulties, hesitate to make representations on their own behalf. The Commission has good reason to believe that routine work with radium should involve no real risk to operators, provided that the accepted precautions are strictly observed by all concerned, including the hospital boards.

This whole question of radium officers, so vital to the efficient working of the centres, presents great difficulties in the present condition of hospital finance. In some quarters it would seem that the importance and proper functions of a radium officer are imperfectly appreciated, and even when the necessity of such an appointment has been recognised the special training required is apt to be rated unduly low. For example, it has sometimes been thought that any young doctor who has paid a flying visit to the chief radium centres at home or abroad could thereby acquire sufficient knowledge and experience, not only to take charge of large quantities of radium but also to advise surgeons with regard to its clinical use. This is described in the report as a large and risky assumption which would not for a moment be endorsed by leading radiologists. It is of vital importance that the national radium should be utilised only under the best conditions, and to this end an otherwise qualified candidate should be trained at a recognised centre, under skilled radiologists, for a period of not less than 12 months.

The forms of clinical record drawn up by the Commission are now being used by all national centres and have also been adopted by other institutions both in this country and elsewhere. The greatest importance is attached to the accurate keeping of these records which should, at the end of five years, provide full and uniform details of a large number of cases upon which definite conclusions may be based. In consultation with Prof. M. Greenwood the Commission has now drawn up statistical summary cards which have been issued to all centres. Each case of malignant disease treated with radium will be summarised on one of these cards which will be returned to the Commission once yearly for the compilation of national statistics. The great need at the present time is reliable information with regard to the value of radium as a method of treatment when practised by those who have the necessary knowledge to use it properly. Time, and a sufficient volume of accurate and uniform records, are essential to the solution of this problem, and (the Commission's last word) a period of five years at least from the inception of the national scheme will be necessary before any confident verdict can be given.

ANTENATAL SCHEME RUN BY PRACTITIONERS.

THE maternity centre for the urban district of Winsford having failed to attract patients, a scheme for antenatal work by the general practitioners of the district was put forward some years ago, and was sanctioned after some delay by the Ministry of Health in time for it to be started at the beginning of 1930.

Under this scheme the sanitary authority pays 10*s.* 6*d.* for the examination of each expectant mother who is not insured under the N.H.I. Acts. For an insured woman no fee is paid, but the doctors in the town agreed to examine and report on both classes. Only a minority of Winsford women are insured, with the result that the doctor's fee works out at about 7*s.* 6*d.* a case. Dr. L. J. Picton, medical officer of health for the urban district, thinks it would be a better arrangement if this fee were paid for each report irrespective of whether its subject was uninsured or insured. During 1930, of the 187 women who were confined, 58 were examined under the scheme; detailed reports of these and of nine babies born in the present year are included in Dr. Picton's annual report to his health committee. The actual work done, he says, was of good quality, and the tabulated statement in the report is evidence that, even under the arduous conditions of general practice, effective antenatal work can be carried out. He reminds his authority of Sir George Newman's opinion that the man who delivers the woman should be the man who makes the antenatal examination. He admits however that difficult problems may arise, and, when a practitioner desires a second opinion, a specialist may be called in at the cost of the authority. So far his help has not been required.

ARTERIAL ENCEPHALOGRAPHY

ARTERIAL encephalography was introduced in 1927 by Prof. Egas Moniz, of Lisbon, as an aid to the localisation of intracranial tumours. A solution that was opaque to X rays, such as sodium iodide solution, was injected into one carotid artery and a radiogram was immediately taken to show the radio-opaque solution in the cerebral arteries. In his first communications Prof. Moniz suggested that displacements or other modifications of cerebral arteries revealed by these arterial encephalograms might be useful for localisation of certain intracranial tumours. He has now published a monograph which provides a concise and thoughtful summary of the symptoms of raised intracranial pressure and the localising signs of intracranial tumours, and describes his experiences with 90 cases.[1] He gives a full account of experiments on animals and cadavers which led to the choice of 25 per cent. solution of chemically pure sodium iodide as the most suitable radio-opaque solution to be injected into the cerebral circulation, and a frank description of the accidents attending the first injections in human beings. The test consists in the injection of not more than 10 c.cm. of sodium iodide solution into the common carotid artery, previously exposed by dissection under local anæsthesia. A radiogram is immediately taken, and the test is repeated on the other side. It should not be performed when cerebral arterio-sclerosis is suspected; death occurred in two of Prof. Moniz's arterio-sclerotic patients shortly after arterial encephalography. He has found that the carotid arteries are often dilated or show plaques of atheroma when there is cerebral arterio-sclerosis, and he therefore stresses the importance of palpation of the carotid arteries as part of the clinical examination. In other cases, Prof. Moniz states, arterial encephalography can always be performed with safety, though it appears that the injection of sodium iodide is not infrequently followed by temporary loss of consciousness and clonic movements of the limbs which are confined to, or most pronounced on, the side of injection. According to the author these fits are without consequence and their incidence has been considerably reduced by preliminary doses of grs. 5 of luminal. Numerous illustrations show that it is possible to obtain good X ray pictures of the internal carotid, anterior and middle cerebral arteries, and their main branches by this test, and Dr. Moniz has evidently acquired considerable skill in identifying the different vessels in X ray pictures. He claims that he can localise most tumours either from the displacement or obliteration of particular cerebral arteries, or, when the tumour is vascular, from aggregation of the opaque solution within the tumour itself. Of the cases reported in which this test was carried out not a few could have been localised by ordinary clinical and radiographic methods; and the results of subsequent operations in his series do not help to establish the author's claim that the test should supersede ventriculography, though in fairness it must be stated that the high operative mortality may not necessarily be associated with previous arterial injections. In some cases considerable symptomatic improvement has followed carotid injections of sodium iodide, and it is stated that certain cases of serous meningitis may be cured by this method. From his experiences with cerebral arteriography, Prof. Moniz describes physiological and anatomical observations which should be studied by all who are interested in the cerebral circulation. Injection of the carotid arteries, especially the common carotid, produces immediate slowing of the pulse and dyspnœa, phenomena similar to those described by Hering as following external pressure over the bifurcation of the carotid artery. If the fluid runs into the external carotid artery and its branches there is rapid salivation and expectoration which the author regards as reflex. Considerable new light is thrown on the formation of the intracranial arterial tree and accurate knowledge of the position of cerebral arteries and convolutions in relation to the skull has also been obtained.

It is doubtful whether cerebral arteriography will ever supplant ventriculography in the localisation of obscure intracranial tumours, though it may be of use in accurate diagnosis of aneurysms and certain angiomas. However, it is providing many interesting notions about the cerebral circulation of man and its possibilities as an avenue for therapeutics should not be lost sight of in the future. In considering the dangers it should be noted that sodium iodide is not the only opaque medium available. Satisfactory results are reported with iodised oils.[2]

[1] Diagnostic des tumeurs cérébrales et épreuve de l'encéphalographie artérielle. By Egas Moniz, Professeur de Neurologie à la Faculté de Médecine de Lisbonne. Paris: Masson et Cie. 1931. Pp. 512. Fr.100.

ROBERT KNOX ON THE STAGE.

ALTHOUGH "The Anatomist," which is now being played at the new Westminster Theatre, expressly lays no claim to historical accuracy, it does give a lively and not unconvincing portrait of one of the more remarkable figures in medicine. Robert Knox was born in Edinburgh in 1791, graduated in 1814, and almost at once went out to a military hospital in Brussels, where he tended the wounded from Waterloo. Gazetted to the 72nd Highlanders, he sailed with his regiment to the Cape in 1817, where he rode an Arabian mare for 90 miles at a time without apparent fatigue. He took a year's study-leave on the Continent in 1821, enjoying the friendship of Cuvier and other savants in Paris, and in 1822 was placed on

[2] THE LANCET, 1931, i., 249.

half-pay at his own request. John Barclay had recognised in Knox a worthy disciple, and in 1825, the year before he died, offered him a partnership, when he began to lecture on anatomy with a success that was astounding, for so popular were his demonstrations that two-thirds of the medical school came to them. It was this very success that led to his undoing, for he constantly needed anatomical material which was then hard to come by, and this need led to his association with the infamous Burke and Hare. Just over a century ago Burke was hanged, his body being handed over to the anatomical theatre which he had supplied, and public odium fell on Knox, who would seem to have made no inquiry as to the origin of the bodies which arrived so opportunely and at such short intervals. Mr. James Bridie's play tells the story of the murder of Mary Paterson, which was one of the charges in the indictment against Burke, but fell to the ground owing to lack of evidence. The horror of the scene in the Three Tuns Tavern when she fell to the "sack-em-up" men is mitigated in the play by the tenderness of her relations with the drunken demonstrator of anatomy, who is thereafter haunted by the memory of her charm. The acting is on a plane of tragedy which is relieved by lighter touches without sinking into melodrama. Henry Ainley makes of Knox a wayward and capricious hero with a touch of real nobility. The play is a piece of medical history which will interest members of the profession.

INSTITUTE OF MEDICAL PSYCHOLOGY.

THE Tavistock Square Clinic, now in its twelfth year of work, has long been faced by the necessity for expansion and consequent removal from its original premises. The proposal to change its name to The Institute of Medical Psychology has recently been carried into effect, and the Board of Trade has sanctioned the legal alteration in title. Financial considerations have so far made the acquisition of larger premises impossible, but it is hoped that this step may be taken before long. The Clinic has, for the last five months, been obliged to keep its waiting-list closed, because of the number of patients awaiting treatment. It will, however, be reopened very shortly.

FACTORY HYGIENE IN 1930.

THE chief inspector of factories and workshops tells, in his report,[1] of grave trade depression. Luxury industries such as motor-cars, wireless, gramophones, tobacco, and chocolates, suffered least; while in those which are hardest hit modern plant is being installed, and reconstruction work carried out with labour-saving appliances to meet the call when trade improves. Factories increased in number from 152,453 in 1929 to 154,102, in 1930, workshops decreased from 108,323 to 103,371—indicating the tendency for the large establishments to absorb the smaller. Industries of many kinds continue to develop in greater London. The campaign against industrial accidents, by tackling the personal factor, has been vigorously pursued, with satisfactory reductions in both frequency and severity in heavy trades such as blast furnaces, and iron and steel works; much remains to be done however before the full value of safety methods is gathered. Stupidity is hard to control, as when the boiler suit of an engineer, who went inside the fencing of a revolving shafting, became caught on a shaft coupling, and he was taken round and fatally injured. Considerable activity is reported in bringing the silica-dust hazard under control, particularly in the grinding of metals. Fortunately, less injurious substitutes for silica are being found, as in the use of shot to replace silica in sand-blasting operations, whereat several fatal cases of silicosis came under notice. Localised ventilation, designed to meet specific risks with regard to the removal of injurious dust and noxious fumes, is the outstanding feature of modern factory hygiene. Next may be placed improved illumination, with concomitant advantages to output and comfort. The five-day week, with cessation of work on Saturday, but no reduction in weekly hours, is said to be spreading in many trades; it reduces overhead charges, allows opportunity for repairs and cleaning, speeds up output, and improves timekeeping. Instances are quoted of extension of welfare amenities, among which is the provision by certain boiler manufacturers of brackets on the pillars supporting the roof, each of which will support a couple of flower pots; the boilermakers provide and tend the plants and flowers. An opinion is expressed that broadcast music is of assistance to work.

Matters of direct medical interest are dealt with by Dr. J. C. Bridge, senior medical inspector, who reports the welcome addition of two inspectors to his staff. Lead poisoning, although a few more cases occurred than in 1929, remains low, suggesting that this hazard is now well understood and under reasonable control. So long however as lead is used in industry, cases of poisoning are certain to occur until human beings lose their careless habits. An examination of the cases occurring among house-painters, among whom to-day by far the greatest number of cases occur, reveals that, as compared with 17 years ago, the cases are older, pointing to long exposure as the cause, rather than modern conditions. The use of tetrachlorethane for degreasing purposes was found to be creeping in, with the occurrence of toxic symptoms; since equally effective substitutes can be used, this poisonous agent should be prohibited; its capacity for causing fatal toxic jaundice was well demonstrated during the war. A singularly detailed table shows that there is now no tendency for anthrax cases to increase; an excellent pocket-card portraying the development of anthrax pustules from the commencement has been issued and this should be useful both to patients and to doctors. To-day hides and skins claim 24 cases of anthrax out of a total of 43 in all industries. The subject of industrial epithelioma receives considerable attention; 194 cases, with 36 deaths, came under observation in the course of the year. Of these, mule-spinning claimed 82, with 21 deaths, while tar distilling came second with 41 cases and 1 death. Careful periodic medical examination in tar distilleries helps to account for the low mortality. On account of its association with epithelioma, dermatitis is being closely investigated, and information is given in the report setting out both the causative agents and the occupations in which skin troubles occur. Among the agents alkalis stand first, with sugar second, and oil a close third; among occupations, calico dyers and printers lead, with engineers second. Classification is being carried out of all death certificates upon which a diagnosis of silicosis appears; out of 241 cases, the pottery trade claims 52; sandstone, 49; coal-mining, 39; grinding of metals, 36; gold-miners from abroad, 23; refractories industries, 12; sand blasting, 10; tin-mining, 10; and other industries, 90. Reference is made to the occurrence of asbestosis; there is evidence

[1] Annual Report for the Year 1930. H.M. Stationery Office. 1931. Cmd. 3927. 2s. 9d. post free.

that removal from exposure to the dust may delay a disabling fibrosis for years, but that exposure to heavy concentrations for a short period of years will result in disabling fibrosis, although, when the hazard is left, the worker may not notice anything amiss with his health. Asbestosis is in fact a product of two factors—concentration of dust in the air breathed, and length of exposure thereto. With whole-hearted coöperation and modern methods of procedure, prevention of this industrial disease seems possible. First-aid equipment is being generally used in factories with understanding and often with enthusiasm; but exceptions occur, as when the manager of a rag-sorting factory said that he only stocked iodine, as there were plenty of rags in the place.

The report closes with a reference to electrical accidents which have scarcely increased in numbers notwithstanding the vast increase in electrical hazards due to a greater supply of current.

CRIME AND RELIGION.

MANY people who do not accept the creeds of the churches nevertheless consider that their function of guardians of morality is a sufficient justification for their existence. For the most part they have been content to leave this as an assumption. W. A. Bonger in his study of "Criminality and Economic Conditions" concluded that the minimum of criminality is shown by the irreligious. M. Parmalee's retort to this was that the irreligious group includes a larger percentage of people who think for themselves—a fact which implies a higher standard of intelligence and education which is not usually correlated with criminality. This, he says, is not because intelligence and education are in themselves necessarily preventives of crime, but because they are likely to place a person in a position in society where the temptations towards criminal conduct are comparatively small. Such explanation is ingenious but probably unnecessary. Bonger's criminality rates have too fallacious an air about them to be impressive. "When the Devil was ill, the Devil a monk would be," and once the criminal is a prisoner there are obvious advantages, Dr. J. R. Miner points out, in claiming membership of some church and not proclaiming agnosticism too firmly. Dr. Miner himself has endeavoured statistically to measure the influence of the churches on crime.[1] His method of approach is by correlating the percentages of church-members in different areas with the criminality of those areas, using the figures from the 1926 census of religious bodies in each of the United States and the 1923 census of prisoners. His conclusion is that though some slight relationship between number of church-members and commitment ratios suggests itself, there is little evidence in these data that the churches play any large part in the prevention of crime. His study leaves the reader still with the feeling of indefiniteness as to what "church-membership" actually implies. Many people at a census, one can believe, would return themselves as belonging to some denomination, and hesitate to proclaim themselves "irreligious." Their membership may be merely in name and in nothing else. In the late war every British combatant, no matter how unorthodox his views, had a religion ascribed upon his identification disc, but it is too much to hope that this "church-membership" was negatively correlated with the war-time cult of wangling. In fact church membership in this case meant nothing. Another flaw in the statistics from the United States that naturally suggests itself is the possibility of inter-State variations in commitments for crime, and it is hard to say how far Dr. Miner has accurately allowed for this.

[1] Human Biology, September, 1931.

GLANDULAR FEVER.

AFTER the period of oblivion and discredit that followed its first description by Pfeiffer, glandular fever has at length attained recognition as a definite clinical entity. This has been due in part to the steady growth of clinical records of the disease, which has resulted in a better understanding of what are and what are not the essential features, but chiefly to observations on the specific blood changes which form the most characteristic single symptom. It is now agreed that the three cardinal symptoms are generalised enlargement of the lymph glands, fever, and the specific lymphocytosis. To these basic signs may be added many minor symptoms and complications whose presence or absence accounts for the variety of the different types of the disease. One of the more lately noticed of these minor symptoms is the occasional presence of a transiently positive Wassermann reaction. Attention was recently directed to this test by M. Radford and J. D. Rolleston [1] and emphasis is again laid upon it by F. Parkes Weber and O. B. Bode [2] who plead for its use in all cases. But while glandular fever has been well served from the side of diagnosis and clinical study this cannot be said of its pathology. It is not unnatural that pathological study of a benign disease should be backward but it is surprising that there are so few descriptions of the histology of lymph glands from cases of glandular fever. Apart from a description of six glands studied by Rohner, Baldridge, and Hansmann in 1925, Dr. C. L. G. Pratt's note in our last issue is the most important contribution to this subject. Those who have studied the histology of glands in this disease will recognise his description of reticulo-endothelial hyperplasia as more typical of the condition than the lymphoid hyperplasia that Rohner, Baldridge, and Hansmann mention. Pratt considers that the histology indicates the possibility of infection by a filtrable virus and points out its resemblance to that seen by J. O. W. Bland [3] in rabbits inoculated with the blood of patients with glandular fever. Bland, at the London Hospital, has now shown, however, that the disease he evokes in rabbits is due to the presence of protozoa of the genus toxoplasma.[4] These protozoa differ from other toxoplasmata in their ability to infect monkeys and to produce in them a disease closely resembling human glandular fever. Bland appears to think that these protozoa may be the cause of the disease in man but admits that confirmatory evidence is required. Apart from this work the only successful attempt to isolate an organism from glandular fever is that of A. G. Nyfeldt [5] whose claims to cultivate from the blood a bacillus that produces a monocytosis in rabbits have not been confirmed although his technique is easily reproducible. Experimental work on glandular fever has been much neglected in spite of the fact that its symptoms, course, and epidemiology point to its being a specific infection. It is possible that if those who have access to cases would now direct their energies to experimental investigation rather than

[1] THE LANCET, 1930, ii., 18.
[2] Münch. Med. Woch., Sept. 18th, p. 1598.
[3] THE LANCET, 1930, ii., 521.
[4] Brit. Jour. Exp. Path., 1931, xii., 311.
[5] Compt. rend. Soc. de biol., 1929, ci., 590.

to the multiplication of clinical descriptions we might more quickly come to an understanding of the essential nature of this interesting disease.

VAN HELMONT.

THE personality of Johann Baptist van Helmont has had a singular attraction for biographers. Forty years after his death Knorr v. Rosenroth took the trouble to translate his works from limping Latin into vivid mediaeval German. In 1840 G. A. Spiess set out again in the German of his time a complete guide to Helmont's system and its relation to other systems, new or old. In 1868 W. Rommelaere published in French some of Helmont's less known writings, and discussed his influence on the science

Portrait of van Helmont from the title page of "Auffgang der Arzneykunst" (Sulzbach, 1683), reproduced in Walter Pagel's book.

and practice of medicine. Last year Walter Pagel made a new attempt [1] at interpretation, using Helmont's criticism of the old teaching of catarrh as a basis for what he calls "a mirror of typical baroque culture." The English reader may find Herr Pagel as difficult to follow as the pupil found his master, but even a cursory glance at his book will reveal something of the tremendous influence which Helmont's inductive mind exerted on the scattered and empirical thought of his time, and will show why Pagel puts as his prefatory motto Henle's line "The day of the last hypothesis would be also the day of the last observation." Curiously enough the present revival and interest in baroque art in this country coincides with a fresh interest in van Helmont. Dr. Moon chose him as the object of a presidential address reported briefly on another page (p. 853). By some claimed as a mystic, by others he is remembered as the father of exact quantitative chemistry. A deeply religious man, he took up medicine, as he believed, on the advice of the Archangel Raphael, became dissatisfied with its followers, but was drawn back again by anxiety to relieve the miserable victims of plague seen at Antwerp. He taught that wisdom was the gift of God, only to be obtained by prayer and self-effacement, yet he was imprisoned by the Inquisition in 1644 as subversive of the faith. He held by the efficacy of the sympathetic ointment of Paracelsus—applied to the weapon, not to the wound—and for this has been ridiculed by moderns; yet which of us now, wounded by a bayonet, would not rather have his wound kept clean and cool, as by the then instructions, leaving the boiling oil, the vulnerary of those days, and other horrid applications to be lavished on the steel. Much was hidden from him; science was hardly born. For five years he grew in 200 lb. of earth a 5 lb. tree, adding nothing to it but water, and noting that while the tree came to weigh 200 lb. the weight of the earth was unchanged. The observation was sound and good, although he was wrong in concluding that the increase came from the water. But he prepared carbonic acid gas from chalk and acetic acid, and knew that it occurred during combustion and in the stomach. He proved the explosive effect of gunpowder to be due to sudden gas formation. He introduced the balance into chemistry, and showed that iron, introduced into a solution of copper sulphate, was not turned into copper but merely replaced it. He came wonderfully near the truth when he said that digestion is a kind of fermentation like brewing. He believed magnetism spread within the body, and might perhaps be recognised outside it in future years. He thought reason and belief had each its own sphere; and it is only now beginning to be recognised how greatly he helped to advance medicine by his imagination.

[1] Jo. Bapt. van Helmont: Einführung in die philosophische Medizin des Barock. Berlin: Julius Springer. Pp. 223. R.M.16.80.

MEDICAL CANDIDATES FOR PARLIAMENT.

TO-DAY (Friday) is nomination day of candidates seeking election to Parliament on Oct. 27th. Of last session's 18 medical commoners the only woman, Dr. Ethel Bentham, died during the session. So far, we have definite assurance that the following are again standing. Dr. J. Hunter offers himself as National Liberal for Dumfries, and Dr. J. H. Morris-Jones for Denbigh, where in each case a Conservative candidate has retired in their favour. Sir Ernest Graham-Little as before is Independent for London University, with authority from his nominating association to give support to a National Government. Mr. Somerville Hastings will be nominated at Reading, Dr. Alfred Salter at West Bermondsey, and Dr. J. H. Williams at Llanelly—all in the Labour interest. Prof. Thomas Sinclair for Queen's University, Belfast, declares himself in support of the National Cabinet. Next week we hope to give a complete list of medical candidates.

Dr. Robert Hutchison will deliver the Harveian Oration at the Royal College of Physicians of London at 4 P.M. on Monday next, Oct. 19th.

Dr. Arthur Rotherham, now a senior commissioner of the Board of Control, has been appointed one of the Lord Chancellor's visitors in lunacy, in place of Sir Robert Armstrong-Jones, who has retired.

Sir John Hawtrey Benson, who died in Dublin on Oct. 9th at the age of 88 years, was president of the Royal College of Physicians of Ireland in the bicentenary year of its School of Physic. He was consulting physician to the City of Dublin Hospital, and had held for many years the post of medical adviser in Ireland to the Colonial Office.

PANEL AND CONTRACT PRACTICE

SICKNESS CLAIMS.

ANOTHER REPLY TO MEMO. 329 I.C.

EVERYONE has been considering the memorandum on certification of incapacity for work issued by the Ministry of Health in June last. The result has chiefly been in the form of muttered grumbling, the memo touches so many sore spots; but there have been several reasoned replies. One of these was noticed in our issue of Sept. 12th (p. 603); another has just been presented to the London Panel Committee by a section presided over by Dr. E. A. Gregg.

INCREASE IN SICKNESS.

Memo. 329 pointed out that the chief increase in sickness claims is in those of short duration, and suggests that the increase is more likely to be due to other causes than incapacitating sickness. If over so long a period (so runs the argument) there had been any corresponding increase of ill-health, there is no apparent reason why it should have manifested itself chiefly in illnesses of short duration, and not to a corresponding extent in cases of serious sickness, causing prolonged incapacity. The section finds it difficult adequately to deal with this pronouncement. That there should have occurred so many illnesses of short duration may be very regrettable from a statistical point of view, but the explanation probably is that in the period in question there actually were a number of such illnesses. Successful simulation of an attack of pharyngitis, influenza, or appendicitis presents certain obvious difficulties. That an increase in the amount of sickness treated by doctors has actually taken place is borne out, the section considers, by the figures of attendances on panel patients, which have risen in recent years from between three and four in a year to between five and six. This is probably because patients are now educated up to getting treatment for illnesses which they would not have troubled about in earlier years. If the steadily increasing number of claims for illnesses of four weeks or less was not due to genuine illness, it should be possible to show that the percentage of claims disallowed by the examining officers was also steadily increasing. The memo itself shows the percentage of claims allowed between 1922 and 1927 to have been practically constant. It would seem likely, if the insurance scheme is to succeed as a form of preventive medicine, that there will be found some increase in the numbers of persons claiming benefit in the words of the memo "most marked at the younger ages and in claims of short duration." Time will show whether as a result of these short claims there may not be found later a decrease in the number of claims of long duration in older patients, although sufficient time has not yet elapsed for this to be apparent in the data available. The results most to be desired from the operation of an ideal system are precisely those in which illnesses of considerable duration would, as the result of the treatment received, resolve into illnesses of short duration.

THE REAL REASONS.

After having disagreed with many of the findings of the memo the section indicates what it considers to be the real reasons for the increase in claims for sickness and disablement benefit. It is necessary to consider the state of affairs before 1912, when sick benefit was handled by so-called sick-clubs. These clubs were small in size, mostly for men only, women being regarded usually as an uninsurable proposition. It was considered unsportsmanlike and unethical to go "on the club" except for a genuine illness; claims were scrutinised by other members who had an interest in the speedy termination of the sick members' incapacity, knowing that if they fell ill they would have to draw on the same fund. With the coming of the N.H.I. Acts all that has been changed. Approved societies are large, with mixed membership, and little or no mutual interest or brotherly feeling. It is true that insured persons still take an interest in the extent to which others succeed in drawing sick benefit. Not however with any idea of protecting the fund to which they have each contributed, but because in this way they can ascertain the extent to which it is reasonable to expect benefit for themselves from the entirely impersonal and (as far as they know or care) inexhaustible State funds, if and when an illness comes along for which they can obtain a doctor's certificate. And if, because the doctor has been severe or the illness has not, their period of incapacity is shorter than they had expected, they feel that in some vague way they have been deprived of their "rights," and in many cases make a mental note to tell a more convincing tale next time. The section believes that this altered outlook on the part of the public is largely responsible for a tendency to claim benefit.

Many of these claims are genuine, and, where there is an element of doubt, the section calls attention to a general tendency in recent years to take a less severe view of deviations from the normal. There are many spheres of activity other than medicine where decisions which 20 years ago would have been accepted as "legal, just, and proper" would now be stigmatised as "legal certainly but unnecessarily harsh, and showing a lack of real understanding of the difficulties." It would not be fair to expect doctors, who also are members of the community, to be entirely unaffected by the changes of public opinion around them. It must be remembered that many of the population are not in good health. In his Presidential address at the B.M.A. meeting in July, Dr. W. G. Willoughby gave as examples of "the unsatisfactory position to-day of the general health" the vast amount of sickness shown by national health insurance reports and the wholesale rejection of young adults who have tried to enter the Navy, Army, and Air Force Services.[1] It is not suggested that the general health of the population has deteriorated since 1912, but the section thinks there can be no doubt that much more attention is being paid to health than previously. The insured person is encouraged by health propaganda to consult the doctor earlier and more often and is also becoming more aware of his benefits and privileges under the Acts. It seems possible that certification of incapacity has not reached its peak, but that some further increase may be expected as knowledge of the advantages offered by the service becomes still more widely known among insured persons. A further cause is that in recent years economic conditions generally have been such that the insured person has made a point of claiming every legitimate cash payment to which he was entitled.

THE REMEDY.

Regarding the cause of the different percentages claiming in different classes of insured person, the

[1] THE LANCET, July 25th, p. 172.

section thinks that the explanation here is the relative attractiveness of the benefits to each class in question, and is satisfied that no real improvement can be looked for until there is some readjustment of the sick benefits payable to the various classes. It is suggested that the fundamental figures on which such readjustment could be based would be those showing the sickness benefit of a class which was influenced in drawing benefit solely by incapacity for work. Such figures could be obtained from those of the sickness benefit of married men between 25 and 45, and the extent to which sickness benefit was drawn by this class of insured person might then be taken as the standard. The section pointedly regrets the absence from the memo of the full statistics which the medical profession must have if it is to assist in the solution of the problem. Given these figures the sickness benefits payable to any class of insured patients could then be adjusted so as to equalise the attractiveness, or actual value, of sickness benefit to each class. This would lessen the claims, not only directly because each claim would be less in amount, but also indirectly as the disposition to claim would be less. In so doing it would be necessary to safeguard the case of the man who returns to work too soon for financial reasons, where he is the only wage-earner in a family.

THE LESSON FROM FRANCE.

Dr. J. C. G. Dickinson writes: "The account of the new system of health insurance in France, and your leading article upon it (Sept. 26th, pp. 707 and 692), must have been of the greatest interest to all panel practitioners in this country. In England panel practice was begun some 20 years ago by bluffing the poorer general practitioners—a not very propitious start. The logical mind of the French is a strong asset, and it is interesting to note that similar tactics have failed with that great nation. The French doctors have shown that placing the moral and material welfare of the patient first they are irresistible to the onslaughts of any political party. They did not employ the threat of a strike, but simply that of a combined front; solidarity of the profession with the threat of non-coöperation with any political party who opposed their just and necessary claims. They refused to have practice divided into two groups, insurance and private. They made (and rightly) their slogan the *entente directe*, with no lay department intervening between doctor and patient. They insisted moreover that the doctor should first be faced with a patient and then with a fee received from that patient, and a fee to which the patient had himself to contribute a fraction which was not covered by insurance—a most important moral element. Tribute should be rendered also to the regard of French doctors for the inviolable preservation of the secret professional, and, above all, to their insistence on the control of medical matters and discipline by the medical profession. They further insisted that the medical practitioner must have full charge and control of the patient who has sought his advice, while under treatment. French practitioners are free from the keeping of useless files of record cards. What corresponds to the regional medical officer in France is chiefly concerned in dealing with patients, and not, as in England, in dealing surreptitious raps over the knuckles to panel practitioners.

"Insurance practitioners in England are not likely to be slow in reading the lesson to be learnt from France. If the victory of the doctors in France has been too great, the victory of bureaucracy over the doctors has been too great in England. It is certain that punishment for the so-called 'crimes' of over-prescribing and over-certification will not long be tolerated in England. Surely the Ministry of Health would be wise to offer wide reforms in the terms of service before much more is demanded as a right. The conversion of a great profession into a trade would then cease."

SPECIAL ARTICLES

MEDICINE AND THE LAW.

Hospital Mortuary Supervision: Alleged Negligence.

A CURIOUS action against a hospital was decided in the Shrewsbury County Court a little while ago, the claim being based upon alleged negligence in the supervision of the mortuary arrangements. An infant died in the hospital on Saturday, April 18th, just a month old. The father instructed an undertaker to arrange for the funeral at a certain churchyard on the following Wednesday. The infant's body, wrapped in muslin and with the face exposed, was placed in the mortuary, and on the Monday the undertaker came to measure it. At that moment there was also in the mortuary the stillborn child of other parents, wrapped in cotton-wool with a calico covering stitched at both ends so that no part of the body was exposed. On the covering of the plaintiff's child there was a label bearing the name; on the covering of the stillborn child there was a label containing identification particulars but no name. Later on the Monday a second undertaker came to the mortuary to carry out his contract (made during the week-end) for the removal and burial of the stillborn child. He had been there with the porter on the previous Saturday on business connected with another body and had then been told by the porter about the stillborn child. The second undertaker had thus seen the bodies of the plaintiff's child and of the stillborn child on the Saturday. On the Monday he saw the under-porter who was doing duty in connexion with an operation and who told him to take the keys and go to the mortuary himself. The second undertaker thereupon went to the mortuary and removed and buried a child's body. When the first undertaker arrived on the Wednesday to remove the body of the plaintiff's child for burial, the porter told him that there had been an unfortunate mistake and that the second undertaker had removed the wrong body. Apparently he had taken away the smaller body thinking it must be the stillborn body. In the sequel the plaintiff sued the chairman, vice-chairman, and secretary-superintendent of the hospital as well as the porter. Among other items in his claim was the cost of the Home Secretary's licence for exhumation (£2). In addition to material loss a parent's feelings would naturally be harrowed by the incident. For the purpose of a legal claim, however, since there was no contractual relationship between the parties, the plaintiff must show that the defendants had owed him some legal duty and had failed in that duty.

For the plaintiff it was argued that the defendants owed him the duty of proper custody of his child's body (for the burial of which he was himself legally

responsible), and that they had failed therein by reason of their negligence. The county court judge came to the conclusion that the plaintiff had not succeeded in establishing his claim. With regard to the allegation of carelessness in labelling, a point was made against the hospital that the labels seemed to have been attached by an ordinary pin, not by a safety-pin or by sewing. The judge was satisfied that the proper labels were on the two bodies (*a*) on the Saturday when the porter and second undertaker were in the mortuary, and (*b*) on the Monday when the first undertaker came; he also held that the label appertaining to the plaintiff's child was in the mortuary on the Wednesday when the first undertaker came again. Another suggestion of negligence was the fact that the second undertaker had been allowed to visit the mortuary unattended on the Monday when the mistake occurred. The judge found that it was the practice of the hospital to allow an undertaker to take the key from the office and to enter the mortuary and remove a body unaccompanied if he had previously been to the mortuary with the porter and had had an opportunity of identifying the body with which he was concerned. The judge was satisfied that the second undertaker gave the underporter to understand that he knew what he had to do, the body having been indicated to him on the Saturday. The dismissal of the action shows that the practice of the hospital was not regarded as negligence in law. In the course of his judgment, however, the judge said he thought that the method of custody in the mortuary was capable of improvement and that the liberty given to the undertaker should be controlled. Having regard to the circumstances of the case, he ordered the defendants to pay their own costs. The members of the board of management, he said, did their duty conscientiously and voluntarily; but they were liable in law just as much as individuals if culpable neglect of duty was proved against them. The best system they might devise could not guarantee infallibility; they were expected to use reasonable and proper care in order to reduce the risk of human error to a minimum.

Other hospitals may usefully note the facts and the judge's warning. The unfortunate mistake which occasioned the plaintiff's claim was not the mistake of the hospital staff. The claim failed. But legal proceedings of this nature are something which everyone would wish to avoid.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

THE STUDY OF ANATOMY.

IN his inaugural lecture Prof. J. C. Brash, successor to Prof. Arthur Robinson in the anatomy chair at Edinburgh, dealt with Tradition and Ideals in the Study of Anatomy. He gave full value to the more recent views of anatomical teaching in correlation with biology and physiology. It was being more and more realised, he said, that the analysis of the dead body, fundamental though it is as a means of acquiring the topographical information required for professional work, is not an end in itself, but a preliminary to the synthesis of the living body. In anatomy what one had to aim at was a reasonable basis in methods of instruction. The first thing to be remembered was that an adequate knowledge of the structure of the human body is essential, directly for practice or indirectly for the understanding of other subjects. Secondly, apart from the educative value of getting the true knowledge that comes of understanding rather than mere information, a grasp of principle may be of great value in the mere memorising of details. Anatomy and physiology, however they might diverge in their modern specialisations, were but two aspects of the same knowledge of man's body. It was interpretation, therefore, that gave the soul to anatomy, and since Harvey's time, side by side with continual improvements in description, there had gone on increasing endeavours to expand structure on functional, morphological, developmental, and evolutionary lines. There were those who said they thought anatomy was or ought to be a pure science, sufficient unto itself. The anatomist might, he hoped, be a pure scientist, and as such might be interested in many things, such as the absorbing problems of man's origin, without losing sight of the fact that the justification for his existence was the application of his knowledge to the science and art of medicine.

A TEACHERS' NURSING HOME.

Some years ago, civil servants living in Edinburgh established the East of Scotland Nursing Home, which has been so successful that the clerical services of two large business financial establishments have been admitted to the membership. The Edinburgh branch of the Educational Institute of Scotland, after long consideration, have now succeeded in establishing a similar home. A company, limited by guarantee, and not having a share capital, was incorporated. For a small membership fee and an annual subscription of 15*s*., members of the company and their dependants will, if they need it, have the use of the premises now acquired and the services of a panel of surgeons and medical advisers, on payment of an inclusive fee of three or four guineas per week. Over 1300 members have joined the company from all parts of Scotland—Lewis, Berwick, Caithness, Dumfries—the larger numbers naturally being resident in Fife, The Lothians, and Edinburgh. Premises have been acquired at 34, Royal-terrace, Edinburgh. The constitution is substantially on the same lines as the Civil Service Nursing Home. The Educational Institute is to be congratulated on this new development.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

FRENCH SURGICAL CONGRESS.

ON Oct. 5th the fortieth French Surgical Congress opened in Paris, with Prof. Lambret, of Lille, as its chairman. The first subject of discussion was the post-operative peptic ulcer, which was dealt with by Prof. A. Gosset, who admitted the justification of the complaint made by physicians that the surgeon is too apt to neglect his patient once an operation has been performed. He asked, without evidently expecting a very satisfactory answer to his question, what surgical services provide for the systematic supervision at regular intervals of patients on whom an operation has been performed? The people who have been perfectly well after an operation may be legion, and those with post-operative complications may be rare; but these are the patients who must be weeded out by a comprehensive system of post-operative control. Such a system has been in operation in Gosset's service since 1920. The second subject on the agenda was pneumococcal peritonitis, the discussion of which was opened by Dr. A. Brechot

and Dr. Nové-Josserand, whose survey suggested that pneumonia is the commonest source of this kind of infection. Nové-Josserand's statistics showed that among 40 cases of pneumonococcal peritonitis, there were nine complicated by infections elsewhere, pneumonia occurring in seven cases, and empyema in two. Opinions are apparently divided about the best course to pursue at the first onset of symptoms; in France, Germany, and the Anglo-Saxon countries many authorities prefer to temporise, but a good number of surgeons favour an immediate operation. The third subject on the agenda was the early treatment of compound fractures of the lower limbs, the opening address being given by Dr. G. Roux and Dr. J. Sénèque.

PROSTITUTION AND VENEREAL DISEASE.

While controversies are raging in various towns in France over the licensed brothels—their maintenance or suppression—it is worth noting that in Paris they are dying out, gradually but quite surely. So that, if and when their official extinction is decreed, it is quite possible that there will be no brothels to extinguish. In the *Siècle Médical* for Sept. 17th, Dr. Léon Bizard has traced the evolution of this slow death of the brothels which, in 1871—when the population of Paris was hardly a third of what it is now—numbered 165. To-day their number has been reduced to 31, of which four are to be found in the suburbs. The *maisons de rendez-vous*—which differ from the licensed brothels or *maisons de tolérance* in little of importance—numbered 281 in 1900. By 1930 this number had fallen to 176. One cause of this slow death of the brothels has been the housing shortage which has prevented the opening of new brothels, the authorities doing their best in the interests of bona fide tenants when flats fall vacant. Dr. Bizard is extremely sceptical as to the benefits that will ensue from the disappearance of the brothel conducted under medical supervision. On this point some significant statistics have been quoted in *La Prophylaxie Antivénérienne* for September by Dr. Deguy, who has recently presented a report on prostitution to the Commission de Médecine Publique du Syndicat des Médecins de la Seine. In Havre in 1930 only 10 per cent. of the prostitutes in the licensed brothels were found to be suffering from venereal disease, whereas this was the case with 68 per cent. of the women arrested for the first time for soliciting in public thoroughfares. Dr. Deguy calculates that there are about 5000 prostitutes in Paris under regular medical supervision, and that there are at least a million men visiting the brothels of Paris every year.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

POSTURE.

"DEFINITE information on the prevalence of bad body mechanics, its recognition as a causal factor in disturbances of health, and the methods of satisfactory treatment are needed." Thus the medical service committee of the White House conference last year. It will be observed that they took for granted that poor posture causes ill-health, though they admit with dissatisfaction that "most of this so-called posture work being done in the schools and elsewhere is nothing more than simple callisthenics or gymnastics."

The orthodox American viewpoint on bad posture is set out in a pamphlet published by the Children's Bureau of the U.S. Department of Labour in 1926.[1] "The posture of the average man, because of the force of gravity and the influences of growth and civilisation, becomes drooped or ptotic. With the consequent derangement of the elaborate mechanism maintaining the erect posture of the body comes derangement in position of the viscera, which manifests itself frequently in obscure but distressing ailments of later life." This same official pamphlet describes four grades of posture: excellent, good, poor, and bad. Silhouettes illustrate these postures in stocky-type and thin boys and girls.

Recently the public health service has undertaken a research into the nature of normal physical development and posture. The primary object was to establish a norm from which might be measured the effects of certain occupations. Particular attention was therefore paid to children upon whom occupational stresses are unlikely to have been exerted. A series of reports have been published, of which the latest[2] analyses the data derived from biometric study of 2200 boys and men. An exhaustive statistical study of these data fails to establish any norm of posture. It shows further that any types of posture which may have been used in the past are purely artificial. Posture is exceedingly variable from person to person. Equally great variability was found in the youngest children studied. A rather astonishing discovery is that the depth of the lumbar spinal curve is quite independent of the posture of the individual in any general sense. But the most remarkable conclusion of this study is the absence of any relationship between posture and health. The subjects studied were selected in that no person with any marked deformity, such as a kyphosis due to Pott's disease, was included in the group. Nevertheless, certain physical impairments such as heart disease, hernia, hæmorrhoids, and varicose veins were found present in the group. None of them, except possibly myopia, showed any correlation with the numerous biometric measurements. We are thus in a somewhat ignorant, if scientific, position. There is no longer any ideal posture type, unless it be purely æsthetic, and if postural "defects" (whatever they may be) have any relation to ill-health the relationship remains to be demonstrated. One might add that it must also be shown whether such "defects" are the cause or the result of the sickness to which they are related.

CAUSES OF THE DEPRESSION.

Undoubtedly medical incomes are feeling severely the stress of hard times. Here as elsewhere there is a tendency to blame whatever system is in vogue for the mysterious illness which assails our finance. While England is being converted to the tariff system, American economists are blaming the recent Hawley Smart tariff law for much of the present unemployment. The London correspondent of the *Journal of the American Medical Association* writes (Sept. 19th): "the practice of socialism in general has brought the national finances to such a state that," &c. An economist writing about the same time on the same subject in *Medical Economics*, an American monthly, remarks: "We have been brought to understand that capitalism needs urgent attention. It has permitted grain to rot in one part of the world while in other places stomachs are empty."

[1] Klein, Armin: Posture Clinics; Organization and Exercises. Washington. 1926.
[2] Schwartz, L., Britten, Rollo H., and Thompson, Lewis R.: Studies in Physical Development and Posture. IV. Postural Relations as Noted in Twenty-two Hundred Boys and Men. Washington. 1931. Pp. 54. 20 cents.

POST-GRADUATE LECTURES

WE continue this week the publication of summaries or parts of lectures delivered at the autumn post-graduate courses at London teaching hospitals. Those printed below were given at Charing Cross (Dr. Young), St. Mary's (Dr. Hunt and Dr. Wilson), and Westminster (Dr. Lloyd).

SOME POINTS IN THE TREATMENT OF PNEUMONIA.

(DR. F. H. YOUNG.)

These are a few points in the treatment of pneumonia which may be useful. In the first place, the *type of bed* is important. If it is more than three feet wide the nursing of the case becomes increasingly difficult in proportion to the width of the bed. If possible the patient should be put into a single bed early in the illness; the word "pneumonia" is usually sufficient to secure for you the anxious coöperation of the relatives in any such proposals. The *temperature* of the room is usually too high, and few people keep a thermometer in the house; if one gives instructions to keep a room at 60° F. it will usually be kept at 70° to make sure. *Ventilation* is usually insufficient; the curtains are often drawn, and a sepulchral gloom is achieved, perhaps with a view to preparing the patient for his future lot. A cheerful atmosphere is essential, though this does not for a moment imply that well-meaning friends should be allowed to "cheer him up." If pneumonia is associated with much bronchitis, however, care must be taken to maintain an equable temperature, especially at night. I am convinced that if ventilation is defective the patient does not eliminate his toxins well.

As to *clothing*, tight vests should be avoided; garments should be light and easily removed. A pyjama jacket can be slit up the inner seams of the arms and across the chest at the level of the manubrium sterni and secured with tapes; when necessary the whole thing can be flung back without disturbance to the patient; pyjama trousers can also be treated by slitting along the inner seams, and easy removal of garments facilitates sponging. There are usually too many bedclothes. A blanket and an eiderdown are as much as the patient feels capable of lifting, and additional warmth can be supplied with hot-water bottles. He should be allowed to choose what position he will adopt, but older patients usually feel more comfortable when half sitting up.

Visiting.—It is wise to lay down definite instructions as to which of his friends and relations shall visit him, and how often; such instructions should be given in writing to the nurse, who is then in a position to insist on their observance.

Diet.—A pneumonia patient is generally overfed; after all, he is going to die or recover in eight days, and during that time he will be worse with too much food than too little. He should be given plenty of fluids to help in the elimination of toxins, but milk, unless diluted, should be given sparingly. For other food he may take what usually agrees with him and what he likes, but not too much of it.

Routine *sponging* every four hours, unless he is asleep, I believe to be valuable; tepid water should be used unless the temperature is very high, when it is as well to use cold water to finish off.

Drugs.—The use of alcohol depends on the opinion of the doctor. Digitalis should be given early if at all, and diuretics such as potassium citrate and liquor ammonium acetate do no harm, and are probably useful in helping to eliminate toxins; let me emphasise again the importance of giving plenty of fluids as well. I do not believe that expectorants have any value in pneumonia.

Oxygen is valuable if adequately given, and for this purpose a funnel is useless. A nasal catheter introduced with a lubricant ointment of 2 per cent. novocain and secured by a Bourne's nasal catheter holder is usually well tolerated by the patient. Like digitalis, it should be given early, and the relatives must be reassured, as they are apt to regard oxygen as the precursor of the hearse.

Turning to *serum treatment*, I believe that Felton's mixed types 1 and 2 serum has proved its worth in pneumonia of the type occurring in epidemics. Two or three doses of 20 c.cm. should be given intravenously on successive days. A disadvantage lies in its extreme expense, three doses costing approximately £10. Sporadic cases of pneumonia occurring in the summer are usually of type 3 or 4, and for these the serum is useless. The value of vaccines is not yet decided. I have used Parke Davis's immunogen (mixed pneumococcal) for four years in doses of 0·5 c.cm. on the first day, and 1 c.cm. on following days; I think my results have been better, on the whole, and there have been no ill-effects.

Bleeding is often helpful for lusty adults in the early stages. *Sleep* is essential to the pneumonia patient; chloral grs. x and potassium bromide grs. xx are usually successful in procuring sleep, and if these fail paraldehyde may be given by rectum. Morphia may be necessary if other measures are inadequate, and if it must be given, it should be given in an effective dose; danger lies in repeated doses. Morphia in pneumonia should be used like a revolver—not until it is necessary, and then properly and not too often. Antiphlogistine is preferable to a poultice. Leeches are valuable where pain is severe, or relief may be obtained by injecting about 100 c.cm. of air into the pleural cavity with the usual pneumothorax apparatus. Diathermy is also effective in relieving pain, and morphia must be given if relief cannot be obtained in any other way. Distension is usually due to overfeeding; the passage of a rectal tube may give immediate relief.

Hyperpyrexia should be treated by adequate sponging, and not by antipyretics. In some cases the vasomotor system appears to be poisoned before the heart muscle. Improvement may follow the injection of 5 per cent. glucose in 250 c.cm. of saline into the rectum. Where delirium is very severe hyoscine will control it, but its use is not desirable if it can possibly be avoided. The routine treatment is usually sufficient to prevent delirium becoming excessive.

It is important to decide early where one intends to treat the patient, and to abide by this decision once made. The patient should never be moved on or after the third or fourth day unless circumstances make it imperative. If his resistance is likely to be poor, one should use stimulating methods early. The tendency in the past has been to "wait and see" in pneumonia, but it is better to map out a plan of campaign at the start and to follow it.

FLATULENCE AND SPASM OF THE COLON.

(DR. T. C. HUNT.)

Intestinal gas, unlike gas in the stomach, is almost entirely produced within the bowels themselves. It is mainly fermentative and formed in the colon, but may also be caused by protein decomposition and putrefaction in the gut. Large amounts of gas are normally formed in the intestines—a point worth telling to some hypochondriacal patients—and most of it is absorbed. This gas is an active physiological stimulus to peristalsis, and with normal production, reabsorption, and evacuation is a healthy phenomenon.

Excess of gas is usually caused by too much carbohydrate residue in the colon, and is especially common with the so-called roughage diet as sometimes advised for the treatment of constipation. Abnormal fermentative processes in the large bowel may lead to considerable distension, flatulence, and discomfort. When it is realised that 1 oz. of cellulose, if entirely fermented in the gut, will produce approximately 10 litres of gas, the importance of these processes will be realised.

In such cases the gas is generally odourless or nearly so, whereas foul gas points to protein decomposition, often associated with actual colitis and diarrhœa. It is possible that the absorption of such gases is partly productive of the symptoms of lassitude, headache, and insomnia that we associate with intestinal intoxication. It is at least certain that methane is excreted again in the breath after absorption from the bowel, and the *foul breath* of protein decomposition in the colon is certainly no mere fiction. Such gases are more usually formed with diarrhœa and colitis than in simple constipation, and may, I think, be increased by irritation from drastic purgatives which produce a temporary inflammation of the mucous membrane, and irregular hurried churning and peristaltic movements.

Excessive gas production and irritation is often accompanied by *colon spasm*. Any existing irritative focus such as a chronic appendix is apt to favour the same condition.

The attacks may occur most markedly in the sigmoid, in the splenic flexure, in the hepatic flexure, or in the cæcum, resembling respectively diverticulitis, angina pectoris or pleurisy, gall-stone colic, and appendicitis. Gas in the splenic flexure is indeed a most important cause, with gastric distension, of pain around the heart, palpitations, and dyspnœa. This causes the well-known gastro-cardiac syndrome or, as it is better put, the gastro-colic-cardiac syndrome. The attack is very apt to come on when lying down, and may be quite sudden. The diaphragm may be pressed upon and actually develop some degree of spasm, so that the breathing is short, rapid, and even painful. The pressure upon the heart causes extrasystoles and alterations in rate. The distinction from pleurisy, intercostal neuralgia, or true angina pectoris may not be easy, but two points in particular are of assistance: (1) the attack is eased by pressure (as the patient generally discovers), and by the passage of flatus; and (2) it is eased by change of position, massage, and movement.

Treatment is chiefly directed towards improvement in the abdominal circulation by exercise and massage, diet, and relief of constipation without irritant purgatives. Gradually increasing walking, golf, swimming, riding, &c., should be ordered if possible, but when this is inadvisable abdominal exercises may be useful, with massage to the colon. Deep-breathing exercises are valuable, since the diaphragm movements not only provide a form of massage to the colon but also tend to improve the portal circulation.

The *diet* should be of the non-residue type, in which hard indigestible irritant substances, such as fruit pips, skins, raisins, and cellulose foods such as oatmeal, coarse vegetables, beans, peas, are excluded.

Of *drugs*, belladonna and hyoscyamus are most useful, and non-irritant laxatives when constipation is intractable. It must be remembered that a non-residue diet tends to reduce the frequency of defæcation, and that the dangers of moderate constipation are grossly exaggerated, especially in the minds of most patients.

I find that in St. Mary's Hospital about 300 gallons of liquid paraffin are used every year, which should testify to its value. Liquid paraffin does little, however, to soften hard scybala, and is apt to leak through the anus when given alone; it also tends to coat food particles with a thin layer of oil, and probably in this way interferes more or less with the normal digestive processes. Senna and cascara are definitely irritant for prolonged use, and should be abandoned if possible. Simple saline enemata occasionally and glycerin suppositories may be sufficient to overcome the constipation if the patient is given sufficient reassurance and encouragement to persevere with a daily habit of defæcation even if without result. An occasional pill of colocynth and hyoscyamus (grs. iii. to v.) with ext. belladonnæ (gr. ¼) is useful at the beginning of treatment. Kaolin and kaolinol I have found disappointing in the treatment of flatulence and irritable colon.

A dose of *lactose* (½ to 1 oz.) in the morning in a large cup of weak tea is a useful laxative; it is a non-fermentable sugar, and seems to act alone almost as well as when given with one of the *B. acidophilus* or *bulgaricus* preparations to change the reaction and the bacterial flora of the intestine.

The *biliary circulation* is, I am sure, a further important thing that sometimes requires treatment. Some three pints of bile are normally put out into the small intestine every day and reabsorbed, and it is easy to imagine some constipation developing when such a large fluid exchange is altered. Certainly bile salts and alkalis are worth a trial in treatment. The former cause a much increased biliary flow, and are mildly laxative. Bile salts may be given in 5-grain capsules of the B.P. sod. glycocholate, or in proprietary preparations.

DIFFERENTIAL DIAGNOSIS OF ACUTE PULMONARY DISORDERS.

(DR. W. ERNEST LLOYD.)

Acute bronchitis, which is the commonest of the acute pulmonary disorders, usually follows on a catarrhal infection of the upper respiratory tract. The onset is characterised by moderate fever, dyspnœa, and a distressing cough, associated with pain under the sternum due to the accompanying tracheitis. The sputum at first is mucoid, and later becomes more copious and purulent. The diagnosis is confirmed by the presence of sibili and rhonchi scattered throughout both lungs, although the bases are more commonly affected. If the smallest of the bronchial tubes are inflamed, the symptoms become more severe and capillary bronchitis simulates broncho-pneumonia.

Lobar pneumonia begins as a pneumococcal septicæmia, and this fact explains the acute onset with high temperature, rigor, rapid pulse and respirations.

A characteristic feature of the onset is the change in the pulse respiration ratio from the normal 4 : 1 to 3 : 1 or even 2·5 : 1. Such an acute onset is enough ground for a tentative diagnosis of pneumonia. Although the patient may complain of severe pain on one side of the chest, during the first few days the signs in the lungs are indefinite. Later the cough is accompanied by the typical viscid, rusty sputum, and the physical signs of consolidation develop. In children the clinical features of lobar pneumonia may be atypical. The pain of a basal pneumonia may be referred to the abdomen, and the condition may simulate acute appendicitis. In such cases the characteristic alteration in the pulse respiration ratio is a most important indication that the condition is primarily pulmonary and not abdominal. Apical pneumonia may simulate closely meningitis, and the diagnosis may be in doubt for some days until the signs in the chest become more definite.

Broncho-pneumonia differs from lobar pneumonia in its less sudden onset, and usually develops secondarily to an attack of acute bronchitis or as a complication of some debilitating illness. Streptococcal or influenzal broncho-pneumonia begins suddenly with marked signs of toxæmia, and the condition resembles the onset of lobar pneumonia.

Acute pleurisy offers no difficulty in diagnosis, for the characteristic pain on breathing and the presence of a friction rub suffice for the diagnosis. Acute pleurisy with effusion, however, may be misleading, for at the time the patient is first seen the combination of fever and dullness at one base may suggest the possibility of pneumonia. Displacement of the apex-beat away from the side of the effusion is a most valuable physical sign in diagnosing the presence of fluid, but this sign may be absent when the effusion is not large. Rarely is a patient with an effusion so toxic as a patient suffering from pneumonia. The most constant physical sign of pleural effusion is dullness on percussion. Absent or weak breath sounds are usually present, but the fact that the breath sounds are audible should not exclude the presence of fluid, and in children bronchial breathing may be heard over an effusion. In all cases of doubt, and to help in deciding the ætiology of the effusion, exploration of the chest should be carried out. If done with care, this does not add to the discomfort of the patient, and if the presence of fluid is confirmed, it should be examined fully. In a young patient a serous effusion containing lymphocytes, and sterile on culture, is almost certainly of tuberculous origin. Such an effusion may be the first manifestation of pulmonary tuberculosis, but if a routine radiographic examination of these cases is made after the effusion has disappeared, many of the cases will reveal signs of infiltration in the underlying lung, although there may have been no definite symptoms of tuberculosis. In adults effusion may be the first indication of malignant disease of the lung, and if the effusion is hæmorrhagic the diagnosis of malignant disease is almost certain. Rarely does an empyema develop without previous signs of pneumonia, but in atypical pneumonia of streptococcal origin thin purulent fluid may be present in the chest four or five days after the onset of the illness. Later, thicker pus may be found on exploration, and only at this stage should open drainage of a streptococcal empyema be considered.

Pulmonary tuberculosis may manifest itself as an acute respiratory disorder, and the following acute types occur occasionally :—

(1) *Acute tuberculous broncho-pneumonia* usually arises as an acute spread from some focus in the lungs, and a history of previous tuberculous disease may be forthcoming, although this is not usual. Signs of consolidation are soon followed by signs of excavation and the presence of tubercle bacilli in the sputum confirms the diagnosis.

(2) *Acute lobar type* (caseous pneumonia) is uncommon, but the clinical picture may simulate closely that of lobar pneumonia. The temperature is, however, of a more swinging type, and the delayed resolution of the lung and the persistence of the high fever after the fourteenth day are the clues to the diagnosis. In the early stages, sputum may be absent, but the presence of tubercle bacilli can usually be demonstrated in the later stages.

(3) *Acute miliary tuberculosis* gives rise to marked dyspnœa and cyanosis, and the signs in the lungs are few as compared with the severity of these symptoms. After a short time signs of meningitis develop, and the typical features of tuberculous meningitis may be found in the cerebro-spinal fluid. If the diagnosis is in doubt radiographic examination of the chest will reveal a typical picture.

Spontaneous pneumothorax may give rise to very urgent dyspnœa, and the condition usually begins with dramatic suddenness. The physical signs of pneumothorax are definite, unilateral hyper-resonance on percussion with poor air entry on one side, together with displacement of the apex-beat to the opposite side of the chest, being the characteristic physical signs. The coin sound may be present, but is often absent. Symptoms and signs depend upon the extent of the pneumothorax, and if there is marked displacement of the heart, dyspnœa may be extreme. Pneumothorax may complicate many diseases of the lung, but of all the causes tuberculosis is by far the commonest. It may complicate advanced disease or it may arise when there have been no definite signs of tuberculosis. In every case any sputum available should be examined for tubercle bacilli, and radiography is of great value in diagnosis, especially in cases of hydro- or pyo-pneumothorax. Spontaneous pneumothorax may also occur suddenly in a patient enjoying good health. Although the possibility of tuberculosis must always be considered, cases do occur in which it is impossible to prove its presence and subsequent observation over many years shows that they do not develop pulmonary tuberculosis. Such cases may be due to the rupture of a localised emphysematous portion of lung.

In *massive collapse of the lung* the onset is sudden, with moderate fever and dyspnœa, which may be marked. Such a condition may develop after abdominal operations, and the lower lobe is the one commonly affected. Dullness and altered breath sounds may suggest the possibility of pneumonia, but collapse of the lung usually arises within three days of the operation, and rarely does pneumonia develop so soon. There is one physical sign which is of the greatest value in the diagnosis of collapse, and this is displacement of the apex-beat towards the side of the collapsed lung. In children the condition may follow the inhalation of a foreign body, and it has been observed after trauma to the chest. In adults, carcinoma of the bronchus is one of the commonest causes of collapse, but in these cases the onset is usually gradual.

Infarct of the lung may cause acute respiratory symptoms, the most important of which are pain, dyspnœa, and cough, often with hæmoptysis. Dullness may be found over the infarcted area, and a friction rub may be audible, but both the symptoms and the physical signs depend upon the extent of the infarct. The history of the case is an important clue to the diagnosis. It may follow dislodgment of blood clot in the systemic venous circulation in patients suffering from thrombo-phlebitis or from a dilated right auricle secondary to left-sided valvular disease. A patient may recover from a small infarct of the lung, but if the clot is a large one a main branch of the pulmonary

artery may become blocked and death follows rapidly. Such a catastrophe constitutes one of the unforeseen dangers of abdominal operations.

Lastly, *bronchial asthma* must be included in the acute respiratory disorders. The characteristic feature of true asthma is that the dyspnœa is paroxysmal, and usually comes on during sleep. In a severe case the patient presents a picture of extreme respiratory embarrassment, and he makes every effort to overcome the condition. The rate of breathing may not be much increased, but the expiratory effort is characteristically exaggerated. On examination of the lungs the presence of hyper-resonance, very prolonged expiration, together with numerous rhonchi and sibili in both lungs, confirms the diagnosis.

FEVER WITHOUT SIGNS.

(DR. C. M. WILSON.)

The investigation of obscure fever—fever without signs or symptoms—is a common task of every physician. Medical literature does not adequately reflect its importance. The reason no doubt is that the subject is very resistant to arrangement and classification. A mere recitation of case-histories is distasteful to a tidy mind, but I doubt if a more pretentious presentation of the subject is as helpful.

At the outset, it is necessary to ask if there are, in fact, no signs or symptoms, or if they are present and have been overlooked. Symptoms are overlooked more commonly than signs. The legal cast of mind, sceptical and analytical, which weighs the value of evidence, and tests the credibility of witnesses, is not common in the medical profession. For one such, who has the faculty of sifting the relevant from the irrelevant, and of digging up the significant events of the immediate past, there are 20 physicians who are immaculate in their physical signs. It follows that students receive more instruction in eliciting signs than in the art of cross-examining a difficult witness. The experienced physician will admit that if he finds what others have not found it is because, in his hands, the history of the illness has become significant.

Even with that faith in the value of the history it is easy to overlook the directing symptoms. I have recently seen a woman with fever of some weeks' standing in whom I was unable to find signs or symptoms. But later, in hospital, I discovered I had not attached sufficient importance to a slight metrorrhagia associated with some menorrhagia—the expression of degenerative changes in a small fibroid found in the belated examination of the pelvis. I should have liked to enlarge upon the perfunctory histories which are so often put before me because, in my judgment, the art of questioning a patient is not taught as it should be in our medical schools—if indeed it can be taught, and is not more credibly a gift from nature. But I must pass on to the examination of the patient. In this, at any rate, students are well grounded.

It is part of the teacher's art to impart to students sound methods of investigation so that they shall continually put questions to themselves while their hands search the chest and abdomen for physical signs. Sometimes that method is left behind when they go into practice, but, on the whole, as I have said, signs are overlooked less commonly than symptoms. I remember a doctor's wife with fever, a persistent headache, and a fading rash where syphilis was not suspected. In the same week I encountered a second example of syphilis in the secondary stage as the cause of an obscure fever. But these cases stand apart in my experience. I do not remember syphilis in that rôle on other occasions. It was therefore rather surprising to me that, in a discussion on obscure pyrexia at the Medical Society of London ten years ago, so many speakers stressed the importance of keeping syphilis in mind when baffled by obscure pyrexia. In glandular fever small glands are sometimes overlooked, and it is only when they are found that a diagnosis has been made. But I must not multiply instances where difficulty in diagnosis had arisen from a failure to detect the signs.

If the history and the physical examination are unproductive I fall back on a leucocyte count. If there is a leucopenia I feel that my inability to attach a label to the illness will, at any rate, bring no hurt to the patient. The unrest is not in my mind, but in that of the relatives. If there is a leucocytosis the disquiet is in my own mind. Is deep-seated pus being neglected? Where there is a leucocytosis it is an urgent matter to make a diagnosis. I must be content to refer to only two maladies accompanied by leucocytosis. A perinephritic abscess is a fairly common cause of cryptic fever. Sometimes the signs are so nebulous that the site and even the fact of pus formation is not suspected. At other times, the difficulty lies in distinguishing it from other conditions. A woman with some weeks' fever had exquisite tenderness over the appendix, but she said that, during the first week of her illness, the pain had been confined to the region of the right kidney. There was a history of boils, a common precursor of perinephritic abscess, and a definite cloud of albumin in the urine to help in locating the pus in the perinephric tissues. There was a leucocytosis of 18,000. Often perinephritis is found without pus formation. A young doctor of athletic habit had severe tonsillitis and a week later was seen for very severe pain in the region of the kidneys. There was a cloud of albumin, tenderness over the kidneys, and a leucocyte count of 15,000. The condition cleared up in ten days.

Where there is a leucopenia the anxieties of the physician are less pressing. Typhoid is not often overlooked; it is in the minds of most physicians when the second week of a febrile illness comes without a diagnosis. Though tubercle can be very secretive in its manifestations it is surprising how seldom it appears in my records as a cause of obscure fever. In my experience, typhoid, tubercle, influenza, and malaria, the diseases which are commonly associated with a leucopenia, have not presented great difficulties. I say "commonly," because hard-and-fast rules cannot be made.

Those who have written on this subject—and their papers are as rare as obscure fever is common in the life of the general physician—have referred to encephalitis lethargica; pulmonary embolism with perhaps a cough, slight hæmoptysis and no signs; portal pyæmia, with a tumid abdomen and deep-seated malignant disease, as stumbling blocks. I have found pus between the lobes of the lungs a commoner source of error.

In the face of unexplained fever it is the first instinct of the inefficient to turn for help to a laboratory, though in no other field are the efforts of a competent clinician so well rewarded. Here, if at all, must he justify his existence. Here at last he can expose the fallacy that the pedestrian fellow with a knowledge of physical signs is the complete physi-

cian. But on occasion the final word must be left to the laboratory. I have recently seen a doctor with undulant fever, with no symptoms except profuse sweating. The diagnosis depended on the character of the prolonged fever and on the agglutination tests.

If pyrexia in children had been included in my survey infections with the *Bacillus coli communis* without symptoms could not have been excluded. The association of an obscure sinus infection and fever has interested me. I remember a hard-bitten woman in the middle years of a hunting life who became irritable and jumpy. She could not play a set of tennis without excessive fatigue, and had had attacks of faintness. The climacteric had been advanced as an explanation. The antrum was full of pus, but there were no symptoms to draw attention to the condition. It was discovered in the course of routine investigation. Conversely, I have seen the sinuses blamed without justification. Mr. Herbert Tilley, in his book, has pointed out that a sinus which has been the seat of infection may remain opaque to transillumination and give abnormal X ray appearances long after the infection has died out. If this were borne in mind some unnecessary surgical adventures would be avoided.

It is inevitable in an address of this kind that I should appear as a successful detective. Where I have been less successful the issue and its lesson are known only to others. I say this because the beginning of all successful diagnosis lies in humility. To anticipate defeat, to keep apart what we know from what we think we know are the elements of wisdom. A confident nature whose faculties have been blunted by success finds it difficult to preserve that attitude of mind: without it keen minds lose their edge.

PUBLIC HEALTH SERVICES

THE HEALTH OF LONDON.

Statistics for 1930.—Estimated civil population, based on the preliminary reports of the 1931 census, 4,388,000. Births, 69,447; deaths, 50,992; birth-rate, 15·8; death-rate, 11·6. Death-rates per 1000 of the population: Pulmonary tuberculosis, 0·87; all tuberculosis, 0·99; cancer, 1·57; pneumonia, 0·78; bronchitis, 0·44; measles, 0·23. Death-rates per 1000 births: Infant mortality, 59; diarrhœa and enteritis, age 0–2, 9·9; young child, 1–5 years, 31; maternal mortality in childbirth, 3·33.

Dr. F. N. Kay Menzies says [1] the birth-rate was the same as in 1929, and the lowest ever recorded. The number of births was 1529 less than in 1918, when the influence of the European war was at its height. Deaths in 1930 were considerably fewer owing to the comparative absence of epidemic diseases and the low mortality from influenza. A winter not marked by abnormally severe weather kept the respiratory diseases low. These conditions were also favourable to infant life, and the infant mortality-rate was equal to the lowest rate previously recorded in 1927. In a table giving the statistics for the metropolitan boroughs the estimated populations are also founded on the provisional figures of the recent census.

MOTHERS AND INFANTS.

The following metropolitan boroughs had the lowest infant mortality-rates: Chelsea (40), Woolwich (42), Lewisham (43), Greenwich (48), Hackney (50), Camberwell (52), and Poplar (55); whilst the following had the highest: Shoreditch (65), Kensington (69), Islington (69), Stepney (76), Paddington (78), and Holborn (89). The boroughs with the highest rates for diarrhœa and enteritis under two years were: Stepney, 23·7; Islington, 15·8; Kensington, 14·7; and St. Pancras, 14·2. Dr. Menzies says the smallness of the figures make the maternal mortality-rates in the boroughs for a single year misleading. He therefore gives a table showing the childbirth deaths for the eight years 1920–27 and the three years 1928–30. In the whole county the rate was 3·1 per 1000 births for 1920–27 and 3·5 for 1928–30. The boroughs which had the lowest maternal mortality in 1928–30 were: St. Pancras, 2·2 (to be compared with 3·1 in the eight-year period); Poplar, 2·4 (to be compared with 2·9); Stepney, 2·5; and Greenwich, 2·6. During the earlier period Stepney and Greenwich had a rate of 2·4, which was the second lowest. The boroughs with the highest maternal-rates during 1928–30 were Westminster, 7·5 (eight-year period, 4·4); Hampstead, 5·7 (3·4); St. Marylebone, 5·5 (4·7); Stoke Newington, 5·2 (4·4); Woolwich, 5·2 (2·8); and Chelsea, 5·1 (4·8). Of the last-named boroughs, Chelsea, St. Marylebone, Stoke Newington, and Westminster had the highest maternal-rates during 1920–27.

INFECTIOUS DISEASE.

Small-pox of the mild type which was experienced in London in 1928–29 continued unabated in 1930. There were many missed cases. The notified cases numbered 5149, and small-pox appeared as one of the causes on the death certificates of ten London patients. No case of the virulent type occurred in London.

An epidemic of measles occurred in 1929–30 and caused 1059 deaths. It reached its maximum later in the year, and was less severe than the epidemics of 1927–28 and 1925–26, which caused 1427 and 1150 deaths respectively.

There were 13,411 notifications of diphtheria and 452 deaths, the case mortality being 3·3 per cent. The case mortality from diphtheria has fallen markedly since 1922, in the autumn of which year the Ministry issued a memorandum stressing the importance of immediate use of antitoxin. This was further emphasised by a letter to the medical press making it clear that the M.A.B. welcomed the use of antitoxin before cases were sent into their hospitals. The case mortality showed a slight rise in 1930, and it may be that the effect of the memorandum, &c., has worn off.

One case of anthrax, which proved fatal, was notified. The patient was employed at a flour and grain wharf, and had no known contact with skins or furs.

Of 75 confirmed cases of cerebro-spinal fever 51 proved fatal. In addition 29 deaths were recorded of cases unnotified or notified in 1929.

Of 45 confirmed cases of encephalitis lethargica 16 proved fatal, and in addition 49 deaths were recorded of cases unnotified or notified in previous years. Provision has been made for 50 adult post-encephalitics at Winchmore Hill, and owing to the long waiting list the council has decided to increase this accommodation to 165. Of 30 confirmed cases of poliomyelitis and polio-encephalitis four proved fatal, and in addition seven deaths were recorded of cases unnotified or notified in previous years. Special facilities are provided at the Western Hospital for acute cases, and for children suffering from paralysis, &c., at Queen Mary's Hospital, Carshalton. During the year three children were admitted to the Western and 45 to Carshalton. Mr. G. Perkins, F.R.C.S., and Mr. W. H. Trethowan, F.R.C.S., act in a consultative capacity at the Western and Queen Mary's Hospitals respectively. The mortality from influenza was lower than that in any year since 1889.

[1] Copies of this report (L.C.C. No. 2850) may be obtained from Messrs. P. S. King and Sons, Ltd., Westminster.

At the end of the year there were 31,008 cases of pulmonary tuberculosis (17,478 male and 13,530 female) and 11,879 cases of other tuberculosis (6211 male and 5668 female) on the registers of the metropolitan boroughs.

Fatal Case of Yellow Fever.—The medical officer of health for St. Pancras reports the circumstances of a death from yellow fever in connexion with an investigation of this disease at a research institute. Early in the investigation a doctor and his laboratory assistant contracted the disease in a mild form, and both recovered. Later another laboratory worker who assisted at a post-mortem on an inoculated monkey had a severe attack but also recovered. About ten days later another of the laboratory staff had a moderately severe attack. During his stay in hospital a member of the hospital staff, who examined his blood, also contracted yellow fever but recovered. The person who examined the blood of the last-mentioned case contracted the infection, and his illness proved fatal in five days although convalescent serum was used on the first day. The history of this outbreak appears to show that the infection of yellow fever can penetrate through the unbroken skin, and that experimental work and the handling of instruments and apparatus contaminated with infected blood is extremely dangerous. After the occurrence of the last case the investigation was discontinued, and the animal house, laboratory, &c., thoroughly cleansed.

HOUSING.

Seamen's Lodging-houses.—Dr. Menzies gives an interesting historical note on the movement for the establishment of seamen's lodging-houses, which began with the erection of the Sailors' Home in Well-street in 1835. In 1854 an Asiatic home was opened for Lascars, and later other nationalities were catered for. The advent of Chinese seamen dates back some 50 years, and in 1915 the Chinese colony was estimated at 2000. Since 1910 the seamen's lodging-houses have been governed by by-laws and licensing, and in December, 1930, they were distributed as follows: 19 houses with 784 beds in Stepney, and 3 houses with 80 beds in Poplar. Approximately, beds are provided for nationalities as follows: 604 in 9 houses for British, 40 in 3 houses for Chinese, 12 in 2 houses for Russians, 20 in 3 houses for Scandinavians, 9 in 2 houses for West Africans, 174 in 2 houses for Indians, and 5 in 1 house for Germans.

Homeless Persons.—An account is given of the effort to cater for homeless persons found in the streets of London at night. The number of these has been greatly reduced by the philanthropic efforts made. This is shown by a comparison of the census made on the night of Feb. 13th, 1910, and on the night of Feb. 14th, 1930. In February, 1910, the homeless persons found were 732 men, 220 women, and 17 children, and in 1930 54 men and 25 women. The number of women is high, but the result of many years' observation leads to the conclusion that very few of the women are really homeless.

VENEREAL DISEASES.

The new cases of venereal disease dealt with were 722 more than in 1929. An attempt was made to ascertain from new cases whether the infection was of less or more than one year's standing. The replies indicated that in 53 per cent. of the syphilis cases and in 86 per cent. of the gonorrhœa cases the infection had taken place within a year. The increased number of attendances per new case of venereal disease suggests that the efficiency of the work continues to gain ground. Thus, in 1930, the attendances per new case were 46, compared with 44 in 1929, and 43 in 1928.

The pathological examinations, made for the treatment centres, have increased from 51,000 in 1919 to 125,000 in 1930; and those made for private practitioners have increased from 10,000 to 33,000. The number of medical practitioners entitled to receive free supplies of approved preparations is now 492. The council make grants-in-aid to six hostels, which provide accommodation for young women under treatment during the period of infectivity. The number of patients so dealt with was 272. On July 1st the V.D. clinic at the London Hospital was transferred to the council as an all-day clinic. The premises are rented from the hospital, but the staff is appointed and the clinic maintained entirely by the council. The clinic now remains open from 8 A.M. to 9 P.M., and provision for intermediate treatment is available daily, Sundays and Bank Holidays included. The director is Dr. T. Anwyl Davies. During the first six months the number of female patients increased twofold, and the regular attendance of all patients improved considerably. The attendances during the second half of the year were 76,183, as compared with 36,802 for the first half.

ADMINISTRATION.

Milk and Dairies Act.—Of 2331 milk samples taken at the London railway termini and biologically examined, 213, or 9·1 per cent., yielded tubercle bacilli, as against 7·5 per cent. in 1929. Notifications were forwarded to the county medical officers of health concerned, and as a result 106 cows were slaughtered under the Tuberculosis Order. In future these milk examinations will be carried out at the council's southern group laboratory at an estimated saving of £650 per annum. Since 1888, the year of the council's inception, the licensed cow sheds have diminished from 738 to 50. The existing sheds are mostly in the rural parts of Woolwich, or in Stepney and Bethnal Green, where they are needed for the supply of milk to Jewish residents in accordance with the requirements of their religion.

Antituberculosis Scheme.—The transfer of the poor-law accommodation to the council has enabled a better distribution of the tuberculosis patients among suitable institutions to be made. Of 4894 cases accepted for residential treatment 1241 were passed for observation beds, in order to determine diagnosis or suitability for sanatorium treatment. Of 1195 patients discharged from observation beds during the year 846 were diagnosed as tuberculous and 349 as non-tuberculous. About 23 of the council's former patients have been accepted as permanent employees at Papworth. A serious problem arises when a patient after 12 or 18 months' treatment and training has small prospect of entering the settlement. To meet this difficulty the council has agreed to pay the difference between the value of the patient as a wage-earner and the cost of his maintenance, subject to periodical review of each case.

Midwives Acts.—The midwives who gave notice of intention to practise numbered 901. They attended about 29,000 confinements, and sent for medical aid in 22·5 per cent. of their cases. Aid was summoned for the infants' eyes in 1369 cases, 321 of which proved to be ophthalmia neonatorum. The follow-up showed that 316 were completely cured, two were left with impaired vision, two died of intercurrent disease, and one could not be traced owing to removal. Post-graduate lectures for midwives were arranged in conjunction with the Middlesex County Council.

Nursing Homes.—The number of applications for registration as nursing homes approved by the council since the Act came into operation is 372. The number on the register at the end of the year was 271, 101 having been cancelled. Applications for registration in 1930 numbered 42, of which eight were withdrawn when the council's requirements were notified to the applicants, and two were refused. Dr. Menzies goes into some detail as to the requirements of the council and the principles which guide them in considering these applications.

Children Acts.—The supervision of nurse-infants under the Children Act, 1908, is carried out by 14 qualified nurses. At the end of 1930 there were 1773 homes under inspection, the number of nurse-infants being 2548. During 1930 it was necessary to remove only six nurse-infants, compared with 18 in

1929. Five of the children were removed from one foster mother, and one child from another. In 101 of the homes sanitary defects were discovered, and overcrowding in 84. Applications for adoption numbered 60, and the result of the hearings were 55 full and two interim adoption orders, while two applications were refused and one withdrawn.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 3RD, 1931.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 41 (last week 45); scarlet fever, 1843; diphtheria, 968; enteric fever, 32; pneumonia, 652; puerperal fever, 40; puerperal pyrexia, 107; cerebro-spinal fever, 25; acute poliomyelitis, 13; acute polio-encephalitis, 2; encephalitis lethargica, 7; relapsing fever, 1 (from the Tyne); continued fever, 1; dysentery, 14; ophthalmia neonatorum, 105. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Oct. 6th–7th was as follows: Small-pox, 87 under treatment, 5 under observation (last week 63 and 4 respectively); scarlet fever, 1455; diphtheria, 1392; enteric fever, 20; measles, 114; whooping-cough, 358; puerperal fever, 9 (plus 6 babies); encephalitis lethargica, 216; poliomyelitis, 7; "other diseases," 140. At St. Margaret's Hospital there were 17 babies (plus 10 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 1 (1) from enteric fever, 6 (2) from measles, 2 (0) from scarlet fever, 14 (6) from whooping-cough, 24 (3) from diphtheria, 59 (13) from diarrhœa and enteritis under two years, and 35 (7) from influenza. The figures in parentheses are those for London itself.

Four deaths from whooping-cough were reported from Liverpool, 2 from Manchester. Hull reported 4 deaths from diphtheria. Two deaths from diphtheria were reported from each of Plymouth, Liverpool, and Manchester. Diarrhœa was credited with 9 deaths at Liverpool, 5 at Birmingham, and 4 each at Nottingham and Newcastle-on-Tyne.

The number of stillbirths notified during the week was 270 (corresponding to a rate of 41 per 1000 births), including 51 in London.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

PROROGATION AND DISSOLUTION.

THE Parliamentary Session was concluded on Wednesday, Oct. 7th. After brief sittings in both the House of Lords and the House of Commons the remaining stages of several outstanding measures were disposed of. A Royal Commission was afterwards held in the House of Lords where the Royal Assent was given to the Appropriation (No. 2) Act, the Foodstuffs (Prevention of Exploitation) Act, and other Acts. The Lord Chancellor then announced the Prorogation of Parliament until Tuesday, Oct. 27th. Later a Proclamation was issued dissolving Parliament, and the writs were issued for a General Election.

HOUSE OF COMMONS.

WEDNESDAY, OCT. 7TH.

Imported Liquid Glucose.

Commander SOUTHBY asked the President of the Board of Trade the total amount and value of liquid glucose imported from Russia during the last 12 months; whether he was aware that sweets made wholly with this foreign material had to be marked as such, whereas sweets which contained a large proportion of this material were being marketed as of British manufacture; and whether, in the interests of British consumers, he would see that any sweets which contained a proportion of foreign material should be clearly marked as such, and that only such sweets as contained ingredients wholly manufactured in this country should be sold as British sweets.—Sir PHILIP CUNLIFFE-LISTER replied: During the 12 months ended August 31st, 1931, the imports of liquid glucose into the United Kingdom registered as consigned from the Soviet Union amounted to 192,599 cwts. of a declared value of £104,704. As regards the second part of the question, I am not aware of any specific requirement that sweets made wholly of foreign material must be marked accordingly.

Commander SOUTHBY: Will the right hon. gentleman consider having a marking order made so that consumers may know whether the sweets are entirely of British manufacture?

Sir P. CUNLIFFE-LISTER: It is open to the sweet manufacturers in this country to make application for a marking order under the Merchandise Marks Act, and if such application were made it would be referred to the committee.

Reduced Grants to Unemployable Blind.

Mr. ROBERT MORRISON asked the Minister of Health whether he was aware that the blind persons subcommittee of the Middlesex county council had passed a recommendation to reduce their grants to the unemployable blind by 2*s.* 6*d.* per week; and whether the Ministry had indicated to local authorities that economy should be exercised in this direction.—Mr. CHAMBERLAIN replied: The answer to the first part of the question is in the affirmative and to the second part in the negative. The advice tendered by the Government to local authorities on the question of the reduction of local expenditure is contained in Circular 1222.

Mr. MORRISON: It surely ought not to be necessary to ask the unemployable blind to tighten their belts in this crisis.

Mr. CHAMBERLAIN: I think the circular I have already issued to local authorities deals with the matter as far as it is possible.

Repairs to Uninhabitable Houses.

Mr. NEIL MACLEAN asked the Minister of Health whether he was aware that many houses were becoming uninhabitable through the neglect of the owners to repair them; and whether he would consider the issuing of instructions to local authorities to compel owners to spend the percentage increase of rents for repairs upon the necessary repairs of these houses and thereby increase employment in the building trades.—Mr. CHAMBERLAIN replied: The issue of certificates on the application of tenants under the Rent Restrictions Acts is within the discretion of local authorities, and I am not empowered to issue such instructions as the hon. Member suggests.

Automatic Gas Alarms.

Mr. TOM SMITH asked the Secretary for Mines whether the inquiry into the use of automatic gas alarms had been completed and, if so, the nature of the report; and whether he proposed to take any action.—Mr. ISAAC FOOT replied: I have received a report from the Safety in Mines Research Board on the recent series of pit trials with a modified form of firedamp detector, and certain inquiries are now being made at the colliery concerned to complete the information I require for a full review of the position.

Mr. WINTERTON: Have not inquiries on this subject been proceeding for something like 18 months or two years, and is there any possibility of early attention being given to this question in view of the terrible loss of life through the lack of these detectors?

Mr. FOOT: Investigations and experiments have been proceeding in Germany. Those experiments have been repeated in this country on account of the difference in our coal. We have completed those experiments and I hope that we shall be able to come to a conclusion very shortly.

WALKER-ON-TYNE ACCIDENT HOSPITAL.—The report for the year ended on June 30th shows that 59 patients were admitted as against 98 in the previous year with an average stay of 8·45 days. There were 1604 out-patients; in 1929–30 there were 2453; and the most frequent accident (ten cases) was crushing injuries to the leg. Owing, presumably, to the larger ratio of unemployment, employers' contributions were paid on 3575 workmen as against 5000 in the previous year. The hospital has a balance in hand of £3356.

CORRESPONDENCE

IRREGULARITIES OF THE TEETH.

To the Editor of THE LANCET.

SIR,—Although Mr. Rushton's letter (p. 715) gives the impression that insufficient recognition is paid to the orthodontic methods which he advocates, he should, I think, really be regarded as one of those who is with us rather than against us. The following extract from my annual report on the scheme puts the matter in its proper perspective:—

"There is only one note of warning. As a public authority, it is necessary to watch that enthusiasm does not outstrip judgment, and that cases which can be dealt with by a few judicious extractions to improve the condition shall not be subjected to prolonged treatment which is cosmetic rather than utilitarian."

I should add that the flat rate cost to the parents for complete treatment is 37*s.*, which by itself negatives the use of expensive or elaborate appliances.

Perspective is, I think, again at fault when Mr. Rushton writes of "a large orthodontic clinic" here. As a matter of actual working experience, we are dealing with all the cases that arise in our school population in one session a week. That is to say, one-eleventh of the total time at the disposal of the school dental surgeon is devoted to the orthodontic work. After nearly 25 years' experience as school medical officer I can say that far more gratitude has been expressed by parents as a result of our orthodontic work than of any other department of public health, child welfare, or school medical activities.

I admit the force of Mr. Rushton's arguments on nasal obstruction. My own experience supports Prof. Brash's view of the hereditary nature of most of these deformities. So often the mother's dental deformity is exhibited in the young child, or the statement is volunteered that it "runs in the father's family."—I am, Sir, yours faithfully,

ELWIN H. T. NASH.

Heston and Isleworth Urban District Council,
Oct. 7th, 1931.

DIPHTHERIA BACILLI.

To the Editor of THE LANCET.

SIR,—The annotation under this heading in your issue of Sept. 26th (p. 696) is of special interest, not only to all who are responsible for the treatment of diphtheria, but to those who are engaged in the practice of active immunisation against the disease. In the annotation it is remarked: "We evidently have a brand of bacillus which is not amenable to treatment with ordinary antitoxin, which it appears is usually made with a strain of intermediate characters." The question arises, does immunisation with the prophylactic preparations at present employed—toxoid, T.A.M., and T.A.F.—which are not prepared from the toxin of the *gravis* form of diphtheria bacillus, protect against infection by this severely toxic type? The Park and Williams No. 8 is, I understand, the strain usually employed for the production of toxin for use in the preparation of antitoxin, and this, I presume, is the toxin from which the various prophylactic preparations and the Schick test toxin are derived.

We are informed by Prof. J. W. McLeod and his collaborators at Leeds that this strain is intermediate in characteristics between the *gravis* and *mitis* forms. If the toxin of each of these strains of diphtheria bacilli is definitely specific, and if the antitoxin which will neutralise the toxin of the *mitis* form will not neutralise the toxin of the *gravis* form it would appear that in future polyvalent antitoxin serum will be necessary in the treatment of diphtheria, and that prophylactic preparations will also be required to be polyvalent.

I am, Sir, yours faithfully,

GEORGE CHESNEY, M.B., D.P.H.,
Oct. 7th, 1931. Asst. Medical Officer of Health, Poole.

THE OBSTRUCTING PROSTATE.

To the Editor of THE LANCET.

SIR,—Writing in a leading article last week (p. 804) on the pathology of this condition, you say that the only serious rival to the theory of adenoma is that advocated by Mr. K. Walker in his Hunterian Lecture (1922)—namely, that the enlargement is in the nature of a fibro-epithelial degeneration analogous to the condition which may be found in the female breast at the menopause. This theory is the one advanced and fully described by F. T. Paul, of Liverpool, in an article which appeared in the *Liverpool Medico-Chirurgical Journal* of July, 1910. The paper is reprinted in The Selected Papers of Mr. Paul, published in 1925 by his colleagues on his seventy-fifth birthday (Ballière, Tindall and Cox). Mr. Paul shows that the accepted theories of enlargement fail; that both the prostate and the breast are controlled by their respective dominant sexual glands (endocrine influences), and are subject to the disturbing influences of the climacteric period; that the microscopical appearances in both organs are similar, and that there is no known neoplasm so strictly limited to an age-period. He concludes by stating that for the above reasons prostatic hypertrophy is not due to a chronic inflammation of septic or specific type, nor to a neoplasm; but that it is an involution change similar to that with which we are familiar in the breast. The paper is accompanied by five pages of beautiful plates showing the great similarity in the involutionary changes in the breast and prostate.

I am, Sir, yours faithfully,

Sunderland, Oct. 10th, 1931. WILLIAM ROBINSON.

A STREPTOCOCCAL CARRIER.

To the Editor of THE LANCET.

SIR,—Your annotation with this title (p. 808) on a report by Drs. Paul Courmont and Paul Sédallian suggests to me that possibly this infection may have had a dental origin. Recent work on dental bacteriology published by Mr. A. Bulleid, in the *British Dental Journal* shows a hæmolytic streptococcus is not uncommonly present in cases of dental sepsis and is usually associated with an active type of infection. An X ray examination of the teeth of any midwives whose cases developed puerperal fever would, I think, be of interest.

I am, Sir, yours faithfully,

J. DUNLOP KIDD.

Queen Anne-street, W., Oct. 12th, 1931.

"LA CURE MARINE."

To the Editor of THE LANCET.

SIR,—With reference to the annotation under this heading in your issue of Oct. 3rd (p. 754), we on the East coast welcome your closing remarks as to the advantages of modern marine treatment in winter as well as in the summer. As medical officer of the Coatham Convalescent Home, Redcar, Yorks, I find an opinion prevalent among the medical profession, especially in the Midlands and West part of the country, that the East coast is unsuitable for convalescent patients during the autumn and winter months of the year, whereas the amount of sunshine and dryness of this part of the coast is a great asset towards the improvement and well-being of those convalescing after operations and others. This can be proved by our weight-charts which show increases in weight up to as much as 12 lb. in a fortnight. My object in urging this suitability of the East coast is to further the advantages of marine cure for patients and to continue the use of convalescent homes in this district because of their singular opportunities.

I am, Sir, yours faithfully,

Oct. 10th, 1931. ALEX. BROWNLIE, M.D.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. J. M. Hayes is placed on the retd. list with the rank of Surg. Capt.

The following appts. are notified: Surg. Comdrs. J. R. Brennan to *President* for post-graduate course; A. G. McKee to *Victory* for R.N. Barracks, Portsmouth; and H. L. Douglas to *Sussex*.

Surg. Lt.-Comdr. W. G. C. Fitzpatrick to *Courageous*.

Surg.-Lts. C. T. Hyatt to *Ormonde*, and J. L. S. Coulter to *Enterprise*.

ROYAL ARMY MEDICAL CORPS.

Maj. E. A. Strachan has relinquished the appointment of Phys. and Surg. to the Royal Hospital, Chelsea, and Maj. H. C. D. Rankin has succeeded to the post.

INDIAN MEDICAL SERVICE.

Capt. M. P. Atkinson to be Maj.

Lts. (T.C.) S. N. Roy, N. P. P. Pillai, and M. S. Katre to be Capts. (T.C.).

Capt. H. S. Gupta relinquishes his temp. commn.

ROYAL AIR FORCE.

Flight Lt. J. D. Leahy is promoted to the rank of Squadron Leader.

The undermentioned Flying Officers are promoted to the rank of Flight Lt.: C. G. Harold, A. Sheehan, J. J. Corcoran, and A. H. Barzilay.

Flight Lt. J. L. Groom is transferred to the Reserve, Class D (ii).

OBITUARY

WALLACE HENRY, M.D. Dubl.

WE regret to announce the sudden death of Dr. Wallace Henry, which occurred on Saturday, Oct. 10th, at his house in Leicester, in the sixty-third year of his age.

Robert Wallace Wesley Henry was born at Dundalk, son of the Rev. H E. Henry, and was educated at Wesley College, Dublin, and later at Trinity College (Dublin University), where he won prizes in the Natural Science School. He graduated as M.B., B.Ch. in 1892, proceeding to the M.D. degree three years later. Early in his career he manifested his interest in ophthalmology, and after holding various junior appointments became resident surgeon in the Birmingham and Midland Eye Hospital, and as far back as 1896 made an interesting contribution to the *Ophthalmic Review* upon Light Perceptive Power in Diagnosis and Prognosis. In 1902 he began his long and valuable career in Leicester; he soon became recognised by appointments and by practice as an authority on his subject. He was ophthalmic surgeon to the Leicester Provident Dispensary, and carried on his considerable professional work in that city for 30 years hand in hand with active labours in behalf of medical organisation. He was a fairly frequent contributor to the literature of his specialty, although during the war he made his mark as an organiser and not as an ophthalmologist, for he was appointed registrar of the 5th Northern General Hospital, and at the cessation of hostilities was promoted brevet lieutenant-colonel.

On the public side of his life Dr. Alfred Cox, medical secretary of the British Medical Association, writes as follows: "The death of Dr. Wallace Henry removes a man whose personality and work, both local and central, for the interests of his profession will leave an abiding impression on all those with whom he worked. I first knew him as the main author and inspiration of the Leicester Public Medical Service, which stands out as one of the finest pieces of medical organisation in this country. When other people were grumbling about the abuses of club practice, Wallace Henry and his friends tackled the matter from the practical point of view, and resolved to offer to the working classes of Leicester a medical service which should be better than anything they had ever had under the club system, should be given on terms which they could well afford, should cover the whole family, and should be under the control of the profession itself. There were few precedents, and these not very encouraging, but Henry made one which has stood the test of time, and the service is now more successful than it has ever been. Not only did it do away with the abuse of contract practice in the Leicester area, but it made the local profession organise itself as well as the service, and for the last 20 years there has been no area in the country where the medical profession has been more united, more practical, or has taken a saner view of medical problems in general. The fact that Henry was an ophthalmologist and never had any personal interest in contract practice, enhances the value of this work. Incidentally I may say that Wallace Henry, like many others of us among the older generation who take an interest in these contract practice problems, was always ready to pay a tribute of gratitude to the work of THE LANCET and its special correspondent, Mr. Adolphe Smith, who did so much to arouse the conscience of the profession on this matter.

"Henry filled every official B.M.A. post in the Leicester area, and was regarded as indispensable in Leicester and the Midlands when the profession had any problems to solve. He came on to the Central Council in 1912, where he quickly made his mark, not only by his pleasant manners, his ability in debate, and the ease with which he was able to coöperate with anybody who meant business, but more particularly by his practical knowledge of the affairs of the profession and of the way in which doctors should be handled. His position in the Association was hall-marked by his election in 1921 as chairman of the Representative Body, an office which he filled for the next three years with conspicuous success, carrying out a difficult task with

tact, good temper, and firmness. He had to use the iron hand occasionally, but it was always concealed in the velvet glove. He continued in active central service up to the time of his death, and there are few committees of the Association on which he did not make his mark. He was particularly active in promoting the Ophthalmic Committee and its offspring the National Ophthalmic Treatment Board for providing the services of ophthalmologists on terms which the working classes can afford.

"During the last year or two he had to cut down some of his work on account of his health. His last appearance at the central office was appropriately enough at the Ophthalmic Committee on Oct. 2nd, when we all noticed that he was looking very unwell, but while he sadly admitted that he did not feel equal to as much work as formerly, he told me that though he had been advised to cut down his activities, work for the B.M.A. would be one of the last things he would abandon. I needed no assurance on this point, for during nearly the whole of my official career he has been one of the bulwarks of the Association—a man to whom we never applied in vain for help. His services were freely recognised by the Association, of which there was no more popular member, and also by his own people in the Leicester area, who knew a good man when they saw him, and showed their gratitude in many ways. In April, 1930, they presented him with his portrait, and it was a very proud and happy evening for him, for, as he said, there is no recognition so dear to a man who has set himself to work for his fellows as the appreciation and affection of the men among whom he lives. It may be said without exaggeration that there were few activities in Leicester of a professional, educational, or social kind in which he did not take a leading part, and it is no platitude to say that Wallace Henry was a man whose place will be very hard to fill."

MEDICAL NEWS

University of Liverpool.

At recent examinations the following candidates were successful:—

D.P.H.

Part II.—S. Canter, R. F. Corlett, J. Hatton, E. W. Jones, J. N. Parrington, L. G. Thomas, F. J. Welton, and E. B. Whittingham.

Harveian Society of London.

Prof. D. P. D. Wilkie will deliver a lecture on the Surgery of the Spleen, at 11, Chandos-street, W., at 8.30 P.M. on Thursday, Nov. 19th.

St. Paul's Hospital.

A post-graduate course in genito-urinary diseases is being held at St. Paul's Hospital, Endell-street, Shaftesbury-avenue, London, W.C., at 4.30 P.M. on Wednesdays until Dec. 16th (except Nov. 25th).

Child-study Society.

Dr. A. F. Tredgold will deliver the Cockburn memorial lecture at 6 P.M. on Thursday, Oct. 22nd, at the Royal Sanitary Institute, 90, Buckingham Palace-road, S.W. His title is Some Observations on Mental Development.

National Institute of Industrial Psychology.

Three lectures on Recent Research into the Causes of Industrial Accidents will be given by Mr. Eric Farmer at 6 P.M., on Mondays, Nov. 2nd, 9th, and 16th, at the Royal Society of Arts, John-street, Adelphi, London, W.C.

Medical Sickness Annuity and Life Assurance Society.

The annual general meeting of this society, whose address is 300, High Holborn, W.C. 1, was held in London on Oct. 7th. Dr. F. C. Martley, who presided, said that the sickness premiums had increased to over £72,000, and the life assurance constituted a record for the society, the new sums assured being over £300,000. The total funds had increased to over three-quarters of a million. The society's schemes for assisting members in the purchase of houses and practices had proved very successful during the past year, and the number of loans granted had increased considerably. Dr. Martley laid stress on the difficulties experienced by everybody connected with the investment of funds, and assured members that everything possible was done to ensure the safety of the society's investments. They would be glad to know that at June 30th last, when the year ended, the market prices of the stocks were higher than the book prices by over £9000. The situation had, of course, altered materially since then, and he drew attention to the statement issued to the press by a leading British life office, that there was a possibility of their postponing a declaration of bonus if any great financial catastrophe occurred. The society's next valuation would not take place until June 30th, 1932, and he hoped that by that time conditions would have become more stabilised. The motion for the adoption of the annual report was passed, and the two retiring directors, Dr. F. C. Martley and Mr. R. J. McNeill Love, were unanimously re-elected.

Prince of Wales's Hospital Dinner.

The annual dinner of the Prince of Wales's Hospital Reunion Association will be held at the Trocadero Restaurant, Piccadilly-circus, W., on Thursday, Nov. 26th, at 7.45 for 8 P.M., with Dr. J. Browning Alexander in the chair. No tickets will be issued, and the Secretary, Dr. Bertram H. Jones, 47, Queen Anne-street, W. 1, should be notified of the intention to be present and the number of guests.

London Medical Exhibition.

This exhibition opens at the new hall of the Royal Horticultural Society, Greycoat-street, Westminster, S.W., on Monday next, and will remain open daily until Friday from noon to 6.30 P.M

Royal Northern Hospital Dinner.

The eighth dinner of the Royal Northern Hospital Past and Present Residents Dining Club will be held on Friday, Oct. 30th, at Frascati's Restaurant, Oxford-street, W., at 8 P.M. for 8.30 P.M. Mr. F. W. Harlow, president of the club, will take the chair, and Mr. A. M. Zamora will be the guest of the evening. Members are invited to bring guests.

Royal Dental Hospital of London.

The annual dinner of the staff and past and present students of this hospital will be held at 6.30 for 7 P.M. on Saturday, Nov. 21st, at the Trocadero Restaurant. Sir Norman Bennett will preside. The medical committee will be At Home to past and present students from 9.30 A.M. to 5 P.M. on the same day.

Pharmaceutical Society of Great Britain.

Lectures on Some Applications of Biochemistry to Modern Pharmaceutical Problems will be given by Mr. Frank Wokes, F.I.C., and Mr. F. J. Dyer, F.I.C., in the lecture theatre of this society, 17, Bloomsbury-square, London, W.C., on Thursday, Oct. 22nd, and succeeding Thursdays at 5.30 P.M. Admission to the first lecture without ticket.

Society of Medical Officers of Health.

The new president of this society is Dr. C. Killick Millard, medical officer of health for the city of Leicester, and he will assume office at a meeting to be held at the society's house, 1, Upper Montague-street, Russell-square, W.C., at 5 P.M. to-day, Friday, Oct. 16th. He will give an address on the Legalisation of Voluntary Euthanasia.

Post-graduate Work in Glasgow.

The winter syllabus of the Glasgow Post-Graduate Medical Association has now been issued, and may be had from the secretary, Dr. James Carslaw, at 9, Woodside-terrace, Glasgow, C. 3. Clinical demonstrations on general and special subjects will be given on Wednesdays at 4.15 P.M. from Nov. 4th to May 25th at various hospitals. There will also be special lectures in the Faculty Hall at 4 P.M. on Tuesdays from Nov. 10th to Feb. 23rd, and courses in special subjects at the Eye Infirmary, the Royal Maternity and Women's Hospital, the Radium Institute, and the Ear, Nose, and Throat Hospital. Clinical assistantships are available in many institutions.

Liverpool Cathedral Service.

The annual service in Liverpool Cathedral in aid of the Royal Medical Benevolent Fund will be held at 3 P.M. on Oct. 18th. The preacher will be the Rt. Rev. Bertram Pollock, Bishop of Norwich. Members of the medical profession and their friends are invited, and tickets may be had from the Hon. Secretary, 28, Rodney-street, Liverpool.

Glasgow Eye Infirmary.

The *William Mackenzie Medal* for 1930 for original contributions to ophthalmology has been awarded by the custodians of the Glasgow Eye Infirmary to Mr. E. Treacher Collins. He is to give an address at the Faculty Hall, 242, St. Vincent-street, Glasgow, on Oct. 30th, at 8.30 P.M., when the medal will be presented.

Wellcome Historical Medical Museum.

At the request of visitors interested in anthropology and archæology the present exhibition at this museum will remain open till Oct. 31st each weekday from 10.30 A.M. to 5.30 P.M. It was arranged in connexion with the centenary meeting of the British Association and includes the results of the latest excavations at Tell el Amarna and Armant, and a collection of jewels and ornaments from Egypt. The address of the Museum is 54, Wigmore-street, London, W.

Medical Golfing Society.

The autumn meeting was held on Prince's Course, Sandwich, on Oct. 10th, when 75 members entered for the various competitions. The results were as follows:—Bogey singles: M. Smyth (6), 6 up; T. H. P. Kolesar (scr.), 2 up; T. A. Torrance (plus 3), 1 up. Bogey foursomes: D. S. Gordon and L. C. Budge tied with R. W. Bristow and W. H. Lamplough, 4 up; Surg.-Comdr. A. C. Rusack and H. E. Scones, 1 up; M. Smyth and T. H. P. Kolesar, 1 down; T. A. Torrance and M. F. Macdonell, 1 down. Medal handicap singles:—Canny Ryall cup: H. Gardiner Hill (71 plus 1 = 72), G. Dawson (82 less 9 = 73), L. C. H. Budge (89 less 14 = 75), and H. Chapple (85 less 10 = 75.

Guild of St. Luke.

The annual service of this Guild will be held at St. Paul's Cathedral on Sunday, Oct. 18th, at 3.15 P.M. Seats will be reserved for medical practitioners and students, all of whom are invited to attend whether they are members of the Guild or not. Those wishing to take part in the procession should robe in the Chapel of St. Michael and St. George. The Guild was founded in 1864 by medical students, and was meant primarily for themselves and their fellows as a help in the special difficulties of the student's life. It still desires to appeal especially to medical students, but it also wishes to keep before the mind of all who deal with the diseases of the body "that highest part of man's nature which finds its expression in religion," its object being the mutual encouragement and support of its members in leading a Christian life. Membership is open to students and practitioners of medicine who are communicants of the Church of England, the clergy of which are eligible for election as clerical associates. Tickets for the service and further particulars concerning the Guild may be obtained from the mission secretary, Rev. S. D. Bhabha, M.D., 8, Drakefell-road, St. Catherine's Park, S.E.14.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, Oct. 20th.—5.30 P.M., GENERAL MEETING OF FELLOWS. 8.30 P.M., PATHOLOGY. Paper: Dr. A. E. Boycott and Dr. C. L. Oakley: Oxygen Poisoning in Rats. Other papers will be read.
THURSDAY.—8.30 P.M., UROLOGY. Paper: Dr. Clyde W. Collings (New York): Electro-surgery of the Bladder Neck.
FRIDAY.—5 P.M., DISEASE IN CHILDREN (Cases at 4.30 P.M.). 8 P.M., EPIDEMIOLOGY AND STATE MEDICINE. Presidential Address: Prof. Major Greenwood: The General Register Office.

HUNTERIAN SOCIETY.
THURSDAY, Oct. 22nd.—7.15 P.M. (at Simpson's Restaurant, Bird-in-hand Court, Cheapside, E.C.), Dinner Meeting. Dr. David Ross: Some Problems of Gout (Presidential Address).

MEDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendish-square, W.
THURSDAY, Oct. 22nd.—8.30 P.M. Dr. D. H. Geffen: Causes of Suicide, to be followed by a discussion.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.
FRIDAY, Oct. 23rd.—5 P.M., Sir Arthur Keith: Demonstration of Specimens Illustrating Changes in the Jaws of English People in Recent Centuries.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.
MONDAY, Oct. 19th.—4 P.M., Dr. Robert Hutchison: Harvey, The Man, His Method and His Message for Us To-day. (Harveian Oration.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Oct. 19th, to SATURDAY, Oct. 24th.—HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C. Post-graduate Course in Diseases of Children. Every morning. Lectures, Demonstrations.—ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester-square, W.C. Course in Diseases of the Skin. Every afternoon. Clinics at 2 and 6 P.M., and Lectures on Tues. and Thurs. at 5 P.M.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Second week of course in Gynæcology.—CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C. All-day course in Diseases of the Ear, Nose, and Throat. Two weeks.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. M.R.C.P. evening lectures at 8.30 P.M. as follows:—Mon., Dr. Maurice Davidson: The Clinical Aspects of Pulmonary Fibrosis. Wed.: Intrathoracic New Growths.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Free lecture on Wed., 4 P.M., by Mr. Kenneth Walker on Prostatic Enlargement.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Wed., 3 P.M., free demonstration by Dr. Kenneth Playfair on The Value of the Electro-cardiograph in Diagnosis, with a demonstration of the interpretation of Electrocardiograms.—MILLER GENERAL HOSPITAL, Greenwich-road, S.E. Fri., 2 P.M., free demonstration by Mr. Arthur Gray of Gynæcological Operations. Further particulars from the Fellowship of Medicine.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, Oct. 17th.—10 A.M., Gynæcological Wards; Genito-urinary Operations; Skin Department. 11 A.M., Surgical Wards. 2 P.M., Surgical Wards; Medical, Surgical, Eye, and Gynæcological Out-patients.
TUESDAY.—9.30 A.M., Operations. 10 A.M., Medical Ward Demonstration; Dental Department. 11 A.M., Throat Operations. 11.30 A.M., Surgical Demonstration. 2 P.M., Operations; Medical, Surgical, and Throat Out-patients.
WEDNESDAY.—10 A.M., Medical Wards; Children's Medical Out-patients. 2 P.M., Medical, Surgical, and Eye Out-patients. 2.30 P.M., Gynæcological Operations. 4.45 P.M., Venereal Diseases Demonstration.
THURSDAY.—10 A.M., Neurological Department. 11.30 A.M., Fracture Demonstration. 2 P.M., Medical, Surgical, Eye, and Genito-urinary Out-patients. 2.30 P.M., Operations.
FRIDAY.—10 A.M., Medical Wards, Skin Department, Dental Department. 2 P.M., Medical, Surgical, and Throat Out-patients. 2.30 P.M., Operations.
SATURDAY.—9 A.M., Throat Operations. 10 A.M., Medical Wards, Surgical Out-patients; Children's Medical Out-patients.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, Oct. 21st.—4.30 P.M., Mr. W. K. Irwin: Diagnosis and Treatment of Bladder Conditions.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.
WEDNESDAY, Oct. 21st.—4 P.M., Dr. Scott Pinchin: Difficulties in the Diagnosis of Pulmonary Disease (Lantern Slides).

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, Oct. 19th.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Walshe: Polyneuritis.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Symonds: Neurosyphilis (1).
WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Riddoch: Intracranial Complications of Sinus Infections (1).
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Sir Percy Sargent: Surgery of the Pituitary Body.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Oct. 20th.—5 P.M., Dr. H. T. Barron: Purpura.
THURSDAY.—5 P.M., Dr. G. B. Dowling: Mycotic Diseases.

ST. MARK'S HOSPITAL, City-road, E.C.
THURSDAY, Oct. 22nd.—4.30 P.M., Mr. E. T. C. Milligan: Peri-ano-rectal Inflamation.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark Hill, S.E.
THURSDAY, Oct. 22nd.—9 P.M., Dr. Charles Newman: Modern Views on Gall-stones.

LONDON SCHOOL OF ECONOMICS, Houghton-street, W.C.
WEDNESDAY, Oct. 21st.—5 P.M., Prof. R. Stenhouse Williams: Production, Distribution, and Value of Milk. (Second of three lectures.)

LONDON SCHOOL OF HYGIENE.
TUESDAY, Oct. 20th, and following Thursday.—5 P.M., Sir George Newman: Rise of Preventive Medicine. (Last Heath Clark lecture.)

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, Oct. 21st.—4 P.M., Sir Leonard Hill: Light and Air and the Health of the Citizen.

ANCOATS HOSPITAL, Manchester.
THURSDAY, Oct. 22nd.—11 A.M., Mr. H. Platt: Clinical Demonstration. 4.15 P.M., Dr. G. J. Langley: Hyperpiesia.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL, Gower-street, W.C.
TUESDAY, Oct. 20th.—5.15 P.M., Prof. J. G. Ledingham: Resistance to Infection, Natural and Induced. (Second Lecture in Pathology.)

MANCHESTER ROYAL INFIRMARY.
TUESDAY, Oct. 20th.—4.15 P.M., Mr. A. H. Southam: Diagnosis of Tumours of the Breast.
FRIDAY.—4.15 P.M., Mr. P. R. Wrigley: Demonstration of Surgical Cases.

VICTORIA MEMORIAL JEWISH HOSPITAL, Elizabeth-street, Manchester.
WEDNESDAY, Oct. 21st.—4.30 P.M., Dr. J. W. A. Hunter: The Treatment of Abortion.

UNIVERSITY OF SHEFFIELD.
FRIDAY, Oct. 23rd.—3.30 P.M. (at the Royal Hospital), Prof. Simpson: Renal Cases.

Appointments

LIESCHING, A. C., F.R.C.S. Edin., L.R.C.P. Lond., has been appointed Honorary Medical Officer, Royal Isle of Wight County Hospital.

NIGHTINGALE, R., M.B., Ch.B. Manch., Surgeon under the Factory and Workshop Act for Stockport.

WILSON, J. ST. G., M.B., C.M. Liverp., F.R.C.S. Eng., Hon. Gynæcological and Obstetrical Surgeon to the Royal Infirmary, Liverpool.

WOODESON, D. A., M.B., Ch.B. Liverp., D.P.H., Deputy M.O.H., Bolton.

London County Council: FOSBERY, H. R., L.M.S.S.A., House Physician, St. James's Hospital; HARRIES, E. H. R., M.D., Lond., D.P.H., Medical Superintendent, North Eastern Hospital; WALKER, C. G., M.B., B.Ch. Manch., Assistant Medical Officer, Hackney Hospital; RONALDSON, G. W., M.D., Ch.B. Glasg., D.P.H., Medical Superintendent, South Eastern Hospital.

Vacancies

For further information refer to the Advertisement columns.

Bath, Royal United Hospital.—H.S. £150.
***Bedford County Hospital.*—H.S. and Asst. H.S. At rate of £175 and £130 respectively.**
Birmingham General Hospital.—H.P. and H.S. Each £70.
Birmingham, Little Bromwich Isolation Hospital, &c.—Med. Supt. £1000.
Blackburn Royal Infirmary.—Res. H.P. £175.
Bradford Royal Infirmary.—H.P. and two H.S.'s. Each £135.
Brentwood, Essex, High Wood Hospital for Children.—Asst. M.O. £350.
***Bristol Eye Hospital.*—Res. H.S. £150.**
Cardiff Royal Infirmary.—H.S. to Ophth. Dept. At rate of £75.
Charing Cross Hospital, W.C.—Asst. Surgeon and Asst. Phys.
Derby County Mental Hospital, Mickleover.—Res. Jun. Asst. M.O. £350.
***Derbyshire County Council.*—M.O. £600.**
East Riding Mental Hospital, Beverley, E. Yorks.—Jun. Asst. M.O. £250.
***Edgware, Redhill County Hospital.*—Res. Asst. M.O. £400.**
Edinburgh Royal Infirmary.—Clin. Asst. for Ophthalmology Dept. £200.
Finchley Urban District, N.—Asst. M.O.H. and Asst. School M.O. £600.
Glasgow Royal Maternity and Women's Hospital.—Res. M.O. and Reg. £300.
Godalming, Surrey, King George V. Sanatorium.—Two H.P.'s. £80.
Grove Park Hospital, Lee, S.E.—Asst. M.O. £350.
Hastings, Royal East Sussex Hospital.—Sen. H.S. At rate of £150.
Hillingdon County Hospital.—Jun. Res. Asst. M.O. £250.
Hospital for Epilepsy and Paralysis, Maida-vale, W.—Res. M.O. and H.P. At rate of £150 and £100 respectively.
Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W. Res. H.S. At rate of £75.
Kidderminster and District General Hospital.—H.S. £150.
King's College Hospital, Denmark Hill, S.E.—Jun. Surgeon.
***Kingston-upon-Hull, Anlaby-road Institution.*—Two Asst. M.O.'s. Each £300.**
Leeds Hospital for Women.—H.S. At rate of £100.
Leeds Maternity Hospital, Hyde-terrace.—Sen. and Jun. H.S. At rate of £52 and £26 respectively.
Leeds, Tuberculosis Sanatorium, Killingbeck.—Asst. Res. M.O. £250.
Liverpool Royal Infirmary.—Cas. O. At rate of £60.
L.C.C. Boys' and Girls' Schools, Acre-lane, Brixton.—M.O. £110.
London Female Lock Hospital, 283, Harrow-road, W.—H.S. At rate of £150.
***London Temperance Hospital, Hampstead-rd., N.W.*—Res. M.O. and Cas. O. At rate of £175 and £120 respectively.**
Lowestoft, St. Luke's Hospital.—Asst. M.O. £350.
Manchester, Royal Children's Hospital, Pendlebury.—Res. M.O At rate of £125.
***Manchester Royal Eye Hospital.*—Jun. H.S. £120**
***Manchester Royal Infirmary, Roby-street.*—H.S. At rate of £100–£200.**
Minehead and West Somerset Hospital.—Res. M.O. At rate of £150.
National Institute of Child Psychology, 19, Warwick-crescent, W.—Clinical Registrar. Also Clin. Assistants.
Newcastle General Hospital, Newcastle-upon-Tyne.—H.P. and H.S. Each at rate of £150.
Newcastle, Royal Victoria Infirmary.—Hon. Asst. Physician.
Newport, I. of W., County Mental Hospital.—Med. Supt. £600.
Norwich, Norfolk and Norwich Hospital.—Cas. O. and H.S. £120.
Queen Charlotte's Maternity Hospital, New Isolation Hospital, Goldhawk-road, Hammersmith.—Res. M.O. £200.
Queen's Hospital for Children, Hackney-road, E.—Clin. Asst. in Orthopædic Department.
Reading, Royal Berkshire Hospital.—Cas. O. and Radiological H.S. and Res. Anæsthetist. Also H.S. for Blagrave Hospital. All at rate of £150.
***Royal Eye Hospital, St. George's Circus, Southwark, S.E.*—H.S. and Asst. H.S. At rate of £150 and £100 respectively.**
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Hon. Surg. Reg.
St. George-in-the-East Hospital, Raine-street, Wapping, E.—Asst. M.O. £350.
St. John's Hospital, St. John's Hill, S.W.—Asst. M.O. £350.
St. Mary Abbots Hospital, Marloes-road, Kensington, W.—Clin. Asst. £100.
St. Mary's Hospital, W.—Res. Anæsthetist. £150.
St. Olave's Hospital, Lower-road, Rotherhithe, S.E.—Two H.P.'s. Each £80.
Saint Pancras Dispensary, 39, Oakley-square, W.C.—Res. M.O. £200.
Samaritan Free Hospital, Marylebone-road, N.W.—H.S. At rate of £100.
***Sheffield Royal Hospital.*—Ophth. H.S. Also Anæsthetist. £120 and £80 respectively.**
***Sheffield Royal Infirmary.*—H.S. and 2nd Asst. Cas. O. At rate of £80.**
Southampton, Children's Hospital and Dispensary for Women.—Res. M.O. At rate of £100.
Stafford, Staffordshire General Infirmary.—H.P. At rate of £150.
Stoke-on-Trent, North Staffordshire Royal Infirmary.—Asst. H.P. £125.
Sutton, Surrey, Downs Hospital for Children.—Asst. M.O. £350.
Ulverston, High Carley Sanatorium.—Asst. Tuber. M.O. £450.
Walsall, Manor Hospital.—Asst. M.O. £350.
***West London Hospital, Hammersmith, W.*—Hon. Asst. Surg. to Genito-Urinary Dept.**
Western Ophthalmic Hospital, Marylebone-road, N.W.—Jun. Non.-Res. H.S. At rate of £100.
York County Hospital.—H.P., Res. Anæsthetist and Asst. H.S. Each £150.
The Secretary of State for the Home Department gives notice of a vacancy for a Surgeon as a Medical Referee, under the Workmen's Compensation Act, for Doncaster and East Retford County Courts. Applications should reach the Private Secretary, Home Office, Whitehall, London, not later than Nov. 4th.

Births, Marriages, and Deaths

BIRTHS.

BAKER.—On Oct. 6th, at The Chestnuts, Stroud, Glos., the wife of Dr. A. Harvard Baker, of a son.
LAKEY.—On Oct. 5th, at a nursing home, Chester, the wife of Dr. Ernest O. Lakey, of a daughter.
LANE.—On Oct. 7th, at Downside-crescent, Hampstead, the wife of Dr. C. Rickword Lane, of a son.

MARRIAGES.

BOWKER—LEADBETER.—On Oct. 7th, at Holy Trinity, Brompton, London, Richard Ryther Stanser Bowker, F.R.C.S., to Greta Mary, second daughter of Mr. G. F. Leadbeter and the late Mrs. Leadbeter, of Newport, Mon.
LANSDOWN—DOVE.—On Oct. 1st, at St. Mary's, Addiscombe, Reginald, younger son of Mr. Francis Lansdown, of Parkstone, to Elizabeth Dove, M.R.C.S., D.P.H., younger daugher of Dr. Percy Dove, O.B.E., and Mrs. Dove, of Eastfield, Croydon.
MCELDOWNEY—LEE.—On Oct. 5th, in London, A. P. McEldowney, M.A., M.R.C.S., L.R.C.P., to H. A. Lee, M.A., daughter of T. J. Lee, of Derby.

DEATHS.

GREIG.—On Oct. 6th, at Little Cottage, Seaford, Sussex, Colonel Frederick James Greig, C.M.G., late A.M.S., in his 69th year.
HENRY.—Robert Wallace Henry, M.D., of Leicester, passed unexpectedly away Oct. 10th, 1931. Interred at Leicester on Thursday, Oct. 15th.
HUMPHRY.—On Oct. 5th, at Quetta, also of Stede Court, Biddenden, Kent, Major-General Lawrence Humphry, C.B., C.M.G., D.D.M.S., late Medical Corps, Honorary Surgeon to the Viceroy of India, in his 56th year.
PAUL.—On Oct. 10th, Dr. John Frederick Paul, of Isledon-road, N.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.

THE DOSAGE OF CIGNOLIN.

A CORRESPONDENT writes: "In the interesting note on the use of cignolin in your issue of Oct. 3rd (p. 754), I think there is a slip on your part regarding the strength as it is given as 0·1–0·2 ad 10·0 in one place and gr. ½ ad ℥i.—i.e., one-tenth of the strength—in another." The smaller proportion of cignolin in the "suitable formula" was intentional, as it seems better to start on the safe side with an unfamiliar drug. The amount should be increased if it proves ineffective.

NOTES, COMMENTS, AND ABSTRACTS

THE LARYNGOSCOPE IN MEDICINE.

Presidential Address delivered before the Medical Society of London on Oct. 12th

BY HERBERT TILLEY, M.D. LOND., F.R.C.S. ENG.,

CONSULTING SURGEON TO THE EAR AND THROAT DEPARTMENT, UNIVERSITY COLLEGE HOSPITAL, LONDON.

IN his charming and instructive address delivered last year[1] our late president, Dr. R. A. Young, sketched the origin and development of the stethoscope, outlined its far-reaching influence on clinical medicine, and demonstrated some of the earliest as well as the latest models of that instrument. For this occasion I have set myself the parallel task of outlining the history of the laryngoscope with a brief sketch of the earliest phases of British laryngology. I shall then endeavour to illustrate the value of the laryngeal mirror in clinical medicine, and some developments which its use has given rise.

History of the Laryngoscope.

In 1817 Bozzini described an instrument with which he was able to see the vocal cords in a living subject. In 1829 Guy Babington, of Guy's Hospital, demonstrated his "glottiscope" before the Hunterian Society of London. It was an oblong mirror set in a silver wire and mounted on a long shank. It is of special interest to note that at a meeting of this Society on Dec. 15th, 1862 (Dr. Francis Sibson in the chair), Dr. Gibb read a paper entitled "Illustrations of the Practical Application of the Laryngoscope," and in the discussion which followed Dr. Streeter said that some ten to twelve years previously (1852–54) his larynx had been examined by Babington "within a hundred yards of the Society's rooms." Liston, of University College Hospital, in his "Practical Surgery," published in 1840, states that in the treatment of obstructive inflammation of larynx, a view of the parts may sometimes be obtained by passing behind the fauces a mirror similar to that used by dentists. Avery, at Charing Cross Hospital, also used a laryngeal mirror of his own device, and although he did not record his observations, many of his friends had seen him use it. Amongst them was Mr. Jabez Hogg, who spoke at the meeting of this Society to which I have already referred.

GARCIA.

I should like to emphasise the work of those early laryngologists of our own country, because it does not seem to me that they have received their due share of the honour of priority in the history of the laryngoscope. Whether they did not grasp its great possibilities or whether their interests were engrossed in what appeared to them to be more serious matters, one cannot say—but it is obvious that, in spite of the use they made of the laryngoscope, the waters of laryngology were not seriously troubled till 1854, when their peace was disturbed by one Manuel Garcia, who was neither physician, surgeon, nor scientist. He was a teacher of singing, who was born in Spain, practised his vocation, and made his discovery in Paris, and a little later came to London, where he published it, and also spent the rest of his long life. Of this discovery Sir StClair Thomson has told us[2] "Señor Garcia was at that time teaching singing in Paris; he had no medical or scientific training, and doubtless, like many before him, he was anxious to perfect his study of the throat by seeing a healthy glottis exposed in the very act of singing." How his wishes became realised was described by Garcia himself at the Seventh International Congress of Medicine, held in London in 1881:—

> "One September day, in 1854," he said, "I was strolling in the Palais Royal, preoccupied with the ever-recurring wish so often repressed as unrealisable, when suddenly I saw the two mirrors of the laryngoscope in their respective positions, as if actually present before my eyes. I went straight to Charrière, the surgical-instrument maker, and, asking if he happened to possess a small mirror with a long handle, was informed that he had a little dentist's mirror, which had been one of the failures of the London exhibition of 1851. I bought it for six francs. Having obtained also a hand mirror, I returned home at once very impatient to begin my experiments. I placed against the uvula the little mirror (which I had heated in warm water and carefully dried), then, flashing upon its surface with a hand mirror a ray of sunlight, I saw at once to my great joy the glottis wide open before me, and so fully exposed, that I could perceive a portion of the trachea. When my excitement had somewhat subsided, I began to examine what was passing before my eyes. The manner in which the glottis silently opened and shut, and moved in the act of phonation, filled me with wonder." [The original mirror referred to above had been lent for this occasion by Mr. Albert Garcia, son of Manuel Garcia.]

In these graphic sentences we have the first authentic account of the discovery of what in modern parlance would be termed auto-laryngoscopy. In due course Garcia published his "Physiological Observations on the Human Voice," which may be found in the Proceedings of the Royal Society for 1885 (p. 399). For some 50 years he lived in this city, and when he had attained his hundredth year his portrait by Sargent was presented to him on March 17th, 1905, at a dinner given in his honour at the Hotel Cecil, when the chair was taken by Sir Henry Butlin. Honours and distinctions were showered upon him, while King Edward VII. personally congratulated the grand old master, and handed him the insignia of a Commander of the Royal Victorian Order. Garcia died on July 1st, 1906, and was buried in the churchyard adjoining St. Edward's Chapel at Sutton-place, near Woking—a charming spot which many of us have visited with the respect and homage due to the great man.

[Mr. Tilley then showed an etched replica of Sargent's portrait, which, he said, would give "some idea of the alert features and striking personality of Señor Manuel Garcia, but naturally they do not betray an amiable humour of which he was possessed. It is recorded that when, on the eve of his death, his temperature was 100° F., the old master smilingly observed, 'Of course everything with me now is 100.'"]

It would be interesting to speculate why the fact that he had been able to see his own vocal cords should have created such enthusiasm in professional and lay minds as to bring about the rebirth of laryngoscopy? In answering this question we must bear in mind that up till then the range of sounds of which the human voice is capable had been an invisible physiological phenomenon. Garcia watched and studied their action on his own person while they produced the different notes of the scale, and thus solved a problem which, for hundreds of years, had baffled investigators. To the scientific mind this was a great achievement. By the lay mind it was regarded as a much greater feat to see one's own vocal cords in action than to observe them in others. Señor Garcia was a singing master, and then—as now—the chance of a tilt at the failures of the professors of medicine and science was readily seized upon by less responsible editors. The pathological defects of the mechanism of voice production were not Garcia's concern, and he wisely left them to the care of physicians and surgeons who soon became skilled in the use of the laryngoscope. In fact, so immediate and so great was the impulse which his observations gave to the study of diseases of the larynx that it seems to me that only a captious and

[1] THE LANCET, 1930, ii., 883.
[2] Jour. Laryng., Rhin., Otol., xxviii., 394.

pedantic critic would deny that he should be regarded as the Father of Laryngology.

TÜRCK AND CZERMAK.

In 1857 Ludwig Türck employed "a small mirror for the investigation of diseases of the larynx" in the General Hospital of Vienna when, in his own words, he "learned of Garcia's investigations." It was asserted that Türck already knew of these, but this he strenuously denied. Up to this time all the observers whose names I have mentioned had employed sunlight reflected from a hand mirror, and consequently both their hands were employed in making a laryngoscopic examination. It was Czermak, of Buda-Pesth, who, following close on the heels of Türck, was the first to employ a large perforated concave mirror for reflecting sunlight or some artificial source of illumination. Furthermore, he held a projection from the frame of the mirror between his teeth, and rightly asserted that but for this invention of the concave reflecting mirror and employing it as he did, laryngoscopy would have been "a dead-born child." Czermak's innovations were of transcendent importance because it freed one hand for intralaryngeal manipulations. For this reason we may regard him as the founder of laryngeal therapeutics. Shortly afterwards his pupil, Semeleder, fixed the mirror on a spectacle frame such as is in common use to-day. In the *Wien. Med. Wochensch.* of March 27th, 1858, appeared a publication by Czermak upon the laryngeal mirror. This, the first publication of its kind, roused the resentment of Türck, who in his own writings initiated an undignified record of strife and jealousy between the two distinguished pioneers. In the same and in the following year Stork, Türck, and Gerhardt began to publish their numerous contributions to laryngology, and in these Türck was especially prolific.

MORELL MACKENZIE.

Morell Mackenzie visited Czermak's clinic in 1859 and returned to London in 1860. Here he put his training to such good purpose that in 1863 he was awarded the Jacksonian prize of the Royal College of Surgeons for his essay on "The Pathology and Treatment of Laryngeal Disease." Mackenzie was indeed the Father of English Laryngology, and for accuracy of observation and clarity of description his two volumes, "Diseases of the Throat and Nose," will always remain a classic. He was lecturer on these subjects at the London Hospital, and later founded the Throat Hospital in Golden-square. To this hospital he quickly drew an incredible wealth of material crowded with rare and interesting cases. His diagnostic acumen was only surpassed by his marvellous dexterity, and it was a never-to-be-forgotten experience to see him remove a laryngeal growth at the first attempt from an uninstructed patient, and this nearly ten years before the introduction of cocaine.

But like all newly born discoveries or departments in medicine, laryngology was looked on askance by the majority of those who held high positions as surgeons and physicians in the large hospitals of London and the provinces. Moreover, the devotees of the latest Cinderella were given to feel that they were not entirely respectable, nor was their acquaintance specially desired by their compeers. As one of my friends has expressed it, there appeared to be a feeling that to relieve a patient from the evil effects of over-eating or drinking was in some way a nobler and more worthy task than to care for his hearing or speech, even though these would appear to be essential if a patient is to make the best use of his life. Such a mistrust of innovation, whether fanned by jealousy or not, did not redound to the credit of the large teaching hospitals. The throat departments of those institutions were as a rule entrusted to a junior surgeon or physician of the staff, who frequently had no special knowledge of laryngology, and seldom had little interest in the work they were elected to do. It was a natural result that when the students left their hospital and began practice they knew little or nothing of diseases of the throat and larynx. Consequently their patients sought advice in the special hospitals where laryngology was making rapid headway, and incidentally valuable, clinical material was lost to the large general institutions.

As a result of this short-sighted policy, special hospitals increased in number, and every facility was offered to students to make themselves practically acquainted with the laryngoscope and the pathological conditions which it alone could reveal. But fortunately there were a few eminent general surgeons and physicians with longer vision and broader minds who were ready to test for themselves the new facts which the laryngoscope had brought to light. I need only mention such names as Henry Butlin, Charters Symonds, W. G. Spencer, de Havilland Hall, George Johnson, T. J. Walker (Peterborough), and David Newman (Glasgow). In due course and one by one the staffs of the large teaching hospitals recognised the situation and placed their ear and throat departments in the charge of surgeons possessed of high qualifications in general medicine and surgery who, by special training and experience, had become experts in their special branch of work.

FELIX SEMON.

Finally, in 1893, Felix Semon, who for the preceding 20 years had been rapidly increasing his reputation in the science and art of laryngology, founded the Laryngological Society of London, and was warmly encouraged by the practical support of those whose names I have mentioned as well as by many of the more prominent junior laryngologists of the day. Sir George Johnson was elected first president of the Society and Manuel Garcia was its first honorary member. Its success was almost instantaneous, and at present the Section of Laryngology is one of the most active of those which compose the Royal Society of Medicine. Next to Morell Mackenzie, early English laryngology owed more to Semon than to anyone else. In its infant years he fought hard in season and out of season against the prejudice which this new department in medicine had engendered, and he lived to see and to reap the rewards of his efforts. His scientific work and contributions to laryngology are too well known to need mention, but two of them will be associated with his name for all time—viz., the "Semon law," in connexion with abductor paralysis of the vocal cords, and his pioneer work on the clinical signs and diagnosis of early intrinsic cancer of the larynx, and its treatment by laryngo-fissure. On his retirement from practice a banquet was given in his honour in the Whitehall Rooms on July 2nd, 1909. Sir Henry Butlin, then President of the Royal College of Surgeons, presided and handed Sir Felix Semon a cheque for £1200 which had been subscribed to purchase a testimonial for him. This sum he magnanimously handed over to the London University to endow a lectureship known as the "Semon Lectureship for Laryngology." At this banquet he was the recipient of illuminated addresses and presents from almost every country in the world. At a later date and on a public occasion, Sir George Makins (then President of the Royal College of Surgeons) said that "it was due to Semon's efforts alone that laryngology, until then unrecognised, had become a respectable and respected speciality."

To those few of us who had some experience of those difficult early years through which British laryngology passed, it seems almost incredible that to-day a graduate in surgery of the London University may take his M.S. degree in oto-rhino-laryngology, and a member of the Royal College of Surgeons may obtain a diploma in the same subjects. Furthermore, how significant it is that in 1917 this old democratic Medical Society of London elected for the first time a laryngologist as its president in the person of Sir

StClair Thomson, who later on and for two years held the same high office in the Royal Society of Medicine.

Laryngoscopy in Clinical Medicine.

Before such an audience as this it would be a poor compliment if I spent more than a few moments in stressing the value of the laryngeal mirror as an indispensable handmaid of clinical medicine. My excuse for mentioning it at all is because, even at this time of day, the significance of an apparently trivial laryngeal symptom is frequently overlooked. Let me take as an example a slight degree of chronic hoarseness or an alteration in the normal voice of a patient which is unaccompanied by pain or any other subjective discomfort. The symptom may be (1) caused by an intrinsic lesion in the larynx, or (2) the local manifestation of a general disease, or (3) the result of a distant but restricted pathological factor.

INTRINSIC LESIONS.

Of early malignant disease of a vocal cord hoarseness is, for many weeks or even months, the only symptom. Its significance is the more deceptive, because it so frequently occurs in adults who appear to be in good health. A moment's glance in the laryngoscope will reveal a localised thickening or infiltration of one of the vocal cords, or some other pathological appearances characteristic of epithelial carcinoma. In these early days of its development, removal by laryngo-fissure or by exposing the growth to radium inserted through a window made in the thyroid cartilage will, in some 80–90 per cent. of the cases, prevent a recurrence of the disease for anything from 5 to 20 years, or even to the full span of life.

But what a tragedy lies in the delayed diagnosis of the causation of what seems so trivial a symptom as slight chronic hoarseness. For slowly the disease spreads, and when at last pain or slight stridor supervenes, it is more than likely that only a complete removal of the larynx will save the patient's life, while incidentally condemning him to pass the rest of his days in comparative silence. Whatever else may be forgotten of this address, I would plead it should ever be remembered that chronic hoarseness of more than three or four weeks' duration demands a laryngoscopic examination, because the pathological factors which may cause the symptoms are so frequently of a serious nature.

LOCAL MANIFESTATION OF GENERAL DISEASE.

What could better demonstrate the value of the laryngoscope than the following type of case. We are consulted by an apparently healthy young patient, who states that his voice has been "a little hoarse for some weeks," that the medicine and pastilles which were prescribed "have done no good." It may be that in answer to our questions we are told that he easily tires with a little exertion, that there is a little cough but "nothing much," and he has never spat up blood nor seen any in the expectoration. Furthermore, he will possibly reply that no one in the family has suffered from "chest diseases." But the laryngoscope may show you a slight granular congestion of one vocal cord, a small tumefaction or a slight superficial infiltration or ulcer at, or in the neighbourhood of, its posterior end.

These are early and typical local manifestations of laryngeal tuberculosis due to a primary lesion in one or both lungs. The full establishment of the diagnosis and treatment of pulmonary infection are of course the concern of the physician, but without the laryngoscope many weeks or months of valuable time have frequently been lost, and to the serious detriment of the patient.

Similarly syphilis, especially in its tertiary stage, may declare itself by a gummatous infiltration or ulceration in the larynx without any other visible stigmata of that disease. Here again hoarseness may be the only symptom of which the patient complains, and the value of the laryngoscope will be obvious.

SIGN OF A DISTANT LESION.

A not uncommon example is aneurysm of the aortic arch, which by pressure on the recurrent laryngeal nerve brings about abductor paralysis of the left vocal cord. The slight hoarseness may be the one and only early symptom of the intrathoracic lesion, and particularly so when the concavity of the arch is the first part affected. In such instances physical signs in the chest may be absent and the revelation of the laryngoscope may only be confirmed by the X ray. If aneurysm be excluded, the vocal cord paralysis may be caused by an intrathoracic growth, and the most frequent disease to effect this is primary malignant disease of the œsophagus involving the right or left current laryngeal nerve, which lies in close proximity to its outer wall.

In this same category of the distant but restricted lesion producing hoarseness by paralysis of a vocal cord one must not omit to mention central nerve lesions affecting the nuclei of the vagus or the proximal region of the trunk of the nerve before it leaves the skull, or again during its long passage down the neck into the thorax. I need only mention bulbar palsy, syringomyelia, disseminated sclerosis, tabes, pachymeningitis at the base of the skull, and the various tumours which may involve the recurrent laryngeal nerves in their upward course in the neck to their distribution in the laryngeal muscles.

If time permitted I might dwell on the frequency with which chronic laryngitis may be the prominent symptom, at any rate from the patient's point of view, in certain diseases of the kidney, or result from such local factors as septic conditions of the nasal accessory sinuses, the tonsils, or of the teeth. The point I want to emphasise in such diseases as I have mentioned is that the laryngeal symptom may be one of the earliest manifestations, not only of a lesion on the vocal cord, but also of a general disease or of a distant localised lesion, and that the laryngoscope provides us with the only means whereby our minds can be made alert to the serious possibilities of a sign which in the first instance may only be revealed in the mirror.

Further Developments of the Instrument.

I have tried to show how much may be learnt from an indirect view of the larynx, but what new worlds would be conquered if only one could look beyond the glottis by direct vision and see into the lower air passages, or through the œsophagus into the stomach! This was the ideal aimed at by laryngologists in the last decade of the nineteenth century, and in its attainment by the discovery of "peroral endoscopy" there was added to the history of medicine and surgery one of its most brilliant pages. The story has been ably written by Dr. Irwin Moore.[1] In 1895 Kirstein (Berlin) showed that it was possible in certain patients to see their vocal cords by direct vision with the aid of light reflected from a hand lamp (Caspar's). He shortly afterwards invented and employed the head lamp known by his name. Killian (Freiburg i.B.), in 1896, quickly grasped the greater possibilities of Kirstein's work, and invented instruments for examining œsophagus, trachea, bronchi, and bronchial tubes. A little later he had the distinction of being the first to remove a foreign body from a bronchus by the employment of them. In August, 1902, he read a paper before the Laryngological Section of the British Medical Association in Manchester in which he summed up the progress that had been made in the previous few years in the diagnosis and treatment of foreign bodies in œsophagus and lower air ways. As Irwin Moore rightly remarks, "It was this paper which made the profession throughout the world realise the capabilities of œsophagoscopy and bronchoscopy." Killian's work was energetically taken up by his brilliant assistants, von Eicken and W. Brünings, and it was to the inventive genius of the latter that we owe

[1] Jour. Laryng. Otol., May, 1926.

many of the improvements in the instrumentarium of his master.

Till then the source of illumination was an electric bulb fixed near the proximal end of the tube. But in 1902 Einhorn (New York) placed it on a light carrier at the distal orifice, and this principle was adopted by Chevalier Jackson in 1904. To those who have used both methods it seems incredible that there can be any dispute as to the many advantages of distal illumination. In France it was Guisez (Paris) who may rightly claim the honour of having in 1903 commenced the popularisation of direct endoscopy amongst the medical profession. A host of others quickly trained themselves to become expert in peroral bronchoscopy and œsophagoscopy and have added much to the sum total of human happiness by saving lives from the accident of an inhaled or swallowed foreign body, or by the restoration to health from disease otherwise inaccessible. But for all time the name of Killian will be honoured as the founder of the method, while that of Chevalier Jackson will stand out as the most brilliant exponent of its art and therapeutic value.

During its earlier years direct endoscopy of the larynx, bronchial tubes, and œsophagus was of value mainly in extraction of foreign bodies. To-day it is recognised as the only legitimate method of intervention. But I have reason for thinking that our physicians and surgeons do not yet realise the value of bronchoscopy in the early diagnosis or treatment of certain types of pulmonary disease, and this even in such common ailments as chronic bronchitis and asthma, as well as some of the less frequent but more serious pathological conditions. The brilliant demonstrations of Chevalier Jackson in this country last autumn will be fresh in the memory of us all. I visited his bronchoscopic clinics in Philadelphia two years ago and was much impressed by the great relief afforded to chronic bronchitics and asthmatics by the removal of viscid adherent mucus from their bronchial tubes whereby the cilia were enabled to regain in some degree their normal function. It was the same with bronchiectasis, chronic pulmonary abscess, and other conditions demanding effectual drainage and aeration. In one morning I saw 23 patients treated by direct bronchoscopy, and of these many were little children. In no instance was a general anæsthetic employed.

FRUITS OF EARLY DIRECT INSPECTION.

Jackson has truly said that the physicians may inspect the chest, palpate, percuss, and auscultate it, and with the aid of the X rays look through it, and while it redounds to their credit that they more often than not make an accurate diagnosis, it is equally true that not infrequently their opinion must necessarily be tentative until the lapse of valuable time brings to light a further development of signs and symptoms which enables a conclusive diagnosis to be made. It is in such instances that an early direct inspection of the gateway to the lungs—i.e., the bronchi and bronchial tubes—would often save the physician's time, considerable mental and physical suffering to the patient, and possibly his life.

I have already referred to the relief which may be given to some common pulmonary affections, but let me mention an example of a more serious type of disease—viz., the adult who suffers from cough with an occasional streak of blood in the expectoration and in whom it has been possible to exclude tubercle and syphilis, and radiography has revealed no intrathoracic abnormality. In such circumstances bronchoscopy has again and again revealed an early benign or malignant growth localised in a bronchus. It is a matter of a moment or two to remove a portion for biopsy, and so establish the diagnosis and apply appropriate treatment.

We know that about 87 per cent. of the cases of malignant disease of the lungs commence in the bronchial mucous membrane, and Chevalier Jackson has stated in a recent communication [4]: "In our experience at the bronchoscopic clinic, malignant growth of the lung is, in some cases, for a long time a strictly local process. These growths are of a relatively low degree of malignancy and are quite sensitive to deep Röntgen therapy. Freedom from recurrence for as long as six years has been noted by us in cases of histologically proved carcinoma of the lung."

While thus emphasising the value of bronchoscopy, let me make myself clear in stating that while he who is an expert in this art may be the last in the coöperative team of physician, radiologist, serologist, and bacteriologist, yet though last in the list, his assistance may prove to be of the most value, and therefore his examination should not be delayed in circumstances where time may be the essence of success in the questions of diagnosis and treatment. Similar observations apply with equal force to certain diseases of the œsophagus, such as chronic inflammatory conditions, simple and malignant strictures, as well as to the removal of impacted foreign bodies.

In conclusion, while one may be tempted to wonder whether these handmaids of medicine—the laryngoscope, bronchoscope, and œsophagoscope—have not reached their limits of usefulness, I am thankful to say that my cerebral arteries are still sufficiently elastic to lead me to believe that in direct inspection of the lower air passages and the œsophagus there yet remains a large field which awaits the young and earnest worker who aims to advance the science and art of medicine. In the words of the greatest of all teachers, "There is nothing hid which shall not be manifested."

[4] Arch. Oto.-Laryng., 1930, xii., 747 to 752.

DEAFNESS AND ITS PREVENTION.

IN a presidential address to the London Jewish Hospital Medical Society, on Oct. 8th, Mr. Maurice Sorsby said that in 1927 there were 4038 totally deaf children in England and Wales, as against 1925 totally blind. About one-third of the school population showed minor auditory defects, and these were even commoner among adults. So-called congenital deafness was responsible for only a small proportion of deafness seen in adults, and even congenital deafness was usually not hereditary but was a sporadic affection of unknown origin. The existence of a deaf parent was no proof that congenital deafness was hereditary; nor, on the other hand, was absence of parental deafness evidence of the contrary. The truly hereditary deaf offered a serious social problem owing to their tendency to inter-marry.

Deafness acquired in adult life was sometimes traceable to somatic defect; thus some forms of otosclerosis were hereditary. But, like most congenital deafness, most acquired deafness was due to non-heritable pathological lesions. In childhood tubo-tympanic infections, spread from the nasopharynx, were mainly responsible. Meningitis destroying the internal ear, and infectious disease giving primary lesions in the middle ear, accounted for a relatively small group. Syphilis was a declining factor. In adult life deafness was caused by the persistence of nasopharyngeal sepsis as in children, and in addition there was the large and indefinite group of cases named otosclerosis, chronic adhesive middle-ear disease, and otherwise. In old age nerve deafness, probably caused by auto-intoxications and arterio-sclerosis, was common.

It was estimated, said Mr. Sorsby, that in England and Wales alone there are 40,000 deaf mutes; they and many of their hearing relatives were potential breeders of a much larger group. The problem of uninherited deafness was to control infectious diseases and eradicate nasopharyngeal sepsis. Its gradual decline was noteworthy as due to the extensive organisation for the removal of infected tonsils in children. Otorrhœa was a late and dangerous stage in middle-ear infection, but modern methods of treatment were effective. Within the last three years its incidence in London County Council schools had been reduced by half.